

The LADIES' *Diary;*
Memoranda OR *h. 456. 6. 13*
 WOMAN'S ALMANACK,

For the Year of our LORD 1777;
 Being the First after DISSEXTILE, or LEAF-YEAR.
 Containing New Improvements in ARTS and SCIENCES,
 And many Entertaining PARTICULARS:
 Designed for the Use and Diversion of the

FAIR-SEX. *17. 24. 65*

The Seventy-fourth ALMANACK Published of this Kind.



VIRTUE and SENSE, with FEMALE-SOFTNESS join'd,
 ALL that subdues and captivates Mankind!
 BRITAIN'S Matchless FAIR resplendent shine;
 THEY rule LOVE'S Empire by a Right Divine:
 Wholly their Charms the astonish'd World admires,
 Whom Royal CHARLOTTE's bright Example fires.

Printed for the COMPANY of STATIONERS,
 and sold by GEORGE HAWKINS, at their Hall, in Ludgate-Street.

[Price, stitched, EIGHT PENCE.]



CHRONOLOGY of REMARKABLE EVENTS.

Y. of Christ.	Ys. since.	Y. of Christ.	Ys. since.
1600	K ING Charles I. born 177	1702	War against France declared
1603	Q. Elizabeth died, King James succeeded - 174	1703	Terrible Wind, Nov. 26 -
1603	A great Plague in London 174	1704	Gibraltar taken - - -
1605	Popish Gun-powder Plot - 172	1704	French beat at Hochstet -
1625	King James died, and K. Charles I. succeeded - 152	1706	French beat at Ramellies -
1641	Bloody Irish Massacre - 136	1707	England and Scotland united
1642	Edge-bill Fight - - - 135	1708	French beat at Oudenard -
1643	Newbury Fight - - - 134	1709	French beat at Blarques -
1644	Marston-Moor Fight - - 133	1713	Peace with France procl. -
1645	Battle of Naseby - - - 132	1714	Queen Ann died, and King George I. succeeded - - -
1649	King Charles I. beheaded 128	1715	Rebellion in the North -
1651	Fight of Worcester - - - 126	1716	A very great Frost - - -
1658	Oliver Cromwell died - - 119	1727	King George I. died, and K. George II. succeeded - - -
1660	King Charles II. restored - 117	1739	The last great Frost - - -
1665	Last great Plague in Lon- don, whereof died 68,586 Persons - - - - - 113	1739	War against Spain declared
1666	Great Fire in London - - 111	1743	A great Comet appeared -
1685	King Charles II. died, King James II. succeeded - - - 92	1744	War against France declared
1685	D. of Monmouth beheaded 92	1745	Rebellion in Scotland - -
1688	Prince of Orange landed - 89	1748	A general Peace - - - -
1688	King James II. abdicated 89	1752	New Style first used in Engl.
1689	King William and Queen Mary crowned - - - 88	1756	War against France declared
1702	K. Will. died, Q. Ann succ. 75	1760	King George II. died, and King George III. succeeded
		1762	War against Spain declared
		1763	Peace with France and Spain proclaimed - - - -

BIRTH-DAYS, [N.S.] and YEARS, of the ROYAL FAMILY of GREAT-BRITAIN.

K ING GEORGE III. Jan. 4, 1738	Prince Aug. Fred. Jan. 27, - 17
Prince of Wales, August 12, 1762	Prince Adolph. Fred. Feb. 24, 17
Prince Frederick, August 16, - 1763	Princess Mary, April 25, - 17
Prince William Henry, Aug. 21, 1765	Queen Charlotte, May 19, - - 17
Prs. Charl. Aug. Mat. Sept. 29, 1766	Prs. Amelia, June 10, - - - 17
Prince Edward, Nov. 2, - - 1767	Prs. Augusta of Brunsw. Aug. 11, 17
Prs. Sophia Augusta, Nov. 8, 1768	Duke of Gloucester, Nov. 25, - 17
Prs. Elizabeth, May 22, - - 1770	Duke of Cumberland, Nov. 7, 17
Prince Ernest Augustus, June 5, 1771	

YEARS of BIRTHS of the Principal SOVEREIGN PRINCES of EUROPE.

C H. A. Frederick, King of Prussia, 1712	Catherine, Empress of Russia, - 17
Joseph, King of Portugal - 1714	Stanislaus Aug. King of Poland 17
Achmet, Grand Seigneur - - 1715	Joseph Ben. Aug. Emp. Germ. 17
Charles, King of Spain - - - 1716	Gustavus, King of Sweden, - - 17
Maria Theresia, Q. Hung. & Bob. 1717	William V. Stadtholder, - - 17
Pius VI. Pope - - - - - 1717	Christian VII, King of Denmark, 17
Viceroy Amade Maria, K. Sardinia 1726	Lewis XVI, King of France, - 17

Last Quarter, 1st, 9 m. past 9 night.
 New Moon, 9th, 39 m. past 3 aftern.
 First Quarter, 16th, 1 m. past 12 noon.
 Full Moon, 23d, 19 m. past 4 aftern.
 Last Quarter, 31st, 28 m. past 6 even.

Sun enters π
 19 d. 2 h. 54 m.

1	W	Circumcision	8	4	3	56	22	58	(rises	22
2	Th			4		56		52	oM	23
3	F			2		57		46	1	24
4	S			2		58		40	2	25
5	E	2 S. aft. Chr. Old Chr.-D.	1	59		33	3	24		26
6	M	Epiphany. Twelfth Day	1	59		26	4	35		27
7	Tu		c	4	c	18	5	40		28
8	W	Lucian.	7	59	1	10	6	45		29
9	Th			58	2	1	(sets			1
10	F			57	3	21	52	5 A.	8	2
11	S			56	4		43	6	20	3
12	E	1 S. aft. Epiph. o. N. Y. D.		55	5		33	7	39	4
13	M	Plow M. Hil. Cam. T. beg.		54	6		22	8	59	5
14	Tu	Orf. Term begins.		53	7		12	10	18	6
15	W			51	9		1	11	36	7
16	Th			50	10	20	49	Morn.		8
17	F	Old Twelfth Day		49	11		37	0	56	9
18	S	Q. Ch. B. d. kept. Prisca.		47	13		25	2	14	10
19	E	2 S. aft. Epiph.		46	14		12	3	29	11
20	M	Fab. In 8 Ds. of Hil. Ret.		45	15	19	59	4	40	12
21	Tu	Agnes.		43	17		45	5	47	13
22	W	Vincent.		42	18		32	6	43	14
23	Th	Hilary Term begins		40	20		17	(rises		15
24	F			39	21		3	5 A.	24	16
25	S	Conversion of St. Paul		37	23	18	48	6	29	17
26	E	Septuagesima Sunday.		36	24		33	7	36	18
27	M	Fr. Aug. Fred. b. 1773. From		34	26		17	8	42	19
28	Tu	[Hil. in 15 Ds. 2d Ret.		32	28		1	9	46	20
29	W			31	29	17	45	10	51	21
30	Th	K. Chz. I. beheaded.		29	31		29	11	55	22
31	F			28	32		12	Morn.		23

Day	L. of D.	Day Inc.	D. breaks	Sun East.	Tw. ends.	Cl. bef. S.	7 Stars So.
1	7 52	0 8	5 59	4 41	6 1	4 b. 20	8 A. 42
6	58	14	57	43	3	6 37	20
11	8 8	24	53	46	7	8 41	7 58
16	20	36	49	50	11	10 29	37
21	34	50	44	54	16	11 59	16
26	48	1 4	38	58	22	13 10	6 55

New Moon, 8th, 32 m. past 4 morn.
 First Quarter, 14th, 18 m. past 8 night.
 Full Moon, 22d, 19 m. past 9 morn.

Sun enters ♈
 17 d. 17 h. 46 m.

Day	Day	Sundays, Holydays, &c.	Sun rises	Sun sets	Sun's Decl.	☾ rises & sets	☾
1	S		7 26	4 34	16 55	1 M. 0	24
2	M	Sexages. S. Purif. or Candlemas Day	24	36	37	2 7	25
3	M	Blaise. Mor. of Purif. 3d R.	22	38	19	3 14	26
4	Tu		21	39	1	4 18	27
5	W	Agatha.	19	41	15 43	5 19	28
6	Th		17	43	25	6 15	29
7	F		15	45	6	☾ sets	30
8	S		14	46	14 47	5 A. 9	1
9	M	Quinquages. or Shrove Sunday	12	48	27	6 32	2
10	M	In 8 Ds. of Purif. 4th Ret.	10	50	8	7 54	3
11	Tu	Shrove-Tuesday	8	52	13 48	9 19	4
12	W	Ash-Wednes. Term ends	6	54	28	10 41	5
13	Th	Old Candlemas-day	4	56	8	11 59	6
14	F	Valentine	3	57	12 47	Morn.	7
15	S	Cam. Term divides mid.	1	59	27	1 18	8
16	M	1 S. in Lent. Quadrages.	6 59	5	6	2 29	9
17	M		57	3	11 45	3 37	10
18	Tu		55	5	24	4 36	11
19	W	Ember Week	53	7	2	5 26	12
20	Th		51	9	10 41	6 7	13
21	F		49	11	19	☾ rises	14
22	S		47	13	9 57	5 A. 23	15
23	M	2 Sunday in Lent	45	15	35	6 29	16
24	M	St. Matthias. Pr. Ad. Fr. b.	44	16	13	7 35	17
25	Tu		42	18	8 51	8 39	18
26	W		40	20	28	9 44	19
27	Th		38	22	6	10 49	20
28	F		36	24	7 43	11 54	21

Days	L. of D.	Day Inc.	D. break	Sun East.	Tw. ends.	Cl. bef. S.	7 Stars
1	9 8	1 24	5 30	5 4	6 3	14 b. 8	6 A. 3
6	26	42	22	9	38	34	
11	44	2 0	14	15	46	41	5
16	10 2	18	6	21	55	27	
21	22	38	4 57	27	7 4	13 56	
26	40	56	48	33	13	9	4

Days L.

1 10

6 11

11

16

21 12

26

Last Quarter, 2d, 42 m. past 1 aftern.
 New Moon, 9th, 20 m. past 3 aftern.
 First Quarter, 16th, 11 m. past 6 morn.
 Full Moon, 24th, 54 m. past 2 morn.

Sun enters γ
 19 d. 18 h. 15 m.

1	S	David.	6	34	5	26	7	20	Morn.	22
2	L	3 Sunday in Lent. <i>Chad.</i>	32	28		6	57	1	2	23
3	M		30	30			34	2	6	24
4	Tu		28	32			11	3	8	25
5	W		26	34	5	48	4	4	4	26
6	Th		24	36		25	4	53	27	27
7	F	Perpetua	22	38		1	5	36	28	28
8	S	4 or Midlent Sunday	20	40	4	38	6	10	29	29
9	L		18	42		14	C sets		1	
10	M		16	44	3	51	6A.56		2	
11	Tu		14	46		27	8	22	3	
12	W	Gregory.	12	48		4	9	46	4	
13	Th		10	50	2	40	11	7	5	
14	F		8	52		16	Morn.		6	
15	S	5 Sunday in Lent	6	54	1	53	0	27	7	
16	L		4	56		29	1	38	8	
17	M	St. Patrick.	2	58		5	2	40	9	
18	Tu	Edw. K. W. S.	0	6	0	0	42	3	32	10
19	W		5	58	2	18	4	15	11	
20	Th		56	4	on	6	4	48	12	
21	F	Benedict. Camb. T. ends	54	6		29	5	19	13	
22	S	Orf. Term ends	52	8		53	5	42	14	
23	L	6 S. in Lent. Palm-Sund.	50	10	1	17	C rises		15	
24	M		48	12		40	6A.36		16	
25	Tu	Annunc. or Lady-Day	46	14	2	4	7	41	17	
26	W		44	16		27	8	47	18	
27	Th		42	18		51	9	52	19	
28	F	Good-Friday	40	20	3	14	10	59	20	
29	S		38	22		37	Morn.		21	
30	L	Easter-Day	36	24	4	1	0	5	22	
31	M	Easter-Monday	24	26		24	1	7	23	

Days	L. of D.	Day Inc.	D. breaks	Sun East.	Tw. ends.	Cl. bef. S.	7 Stars So.
1	10 52	3 8	4 43	5 37	7 18	12b.34	4 A.42
6	11 12	28	32	43	29	11 26	24
11	32	48	21	49	40	10 9	6
16	52	4 8	11	55	50	8 43	3 47
21	12 12	28	0	6 2	8 1	7 13	29
26	32	48	3 48	8	12	5 39	11

Last Quarter, 1st, 31 m. past 5 morn.
 New Moon, 7th, 18 m. past 12 night.
 First Quarter, 14th, 1 m. past 6 even.
 Full Moon, 22d, 52 m. past 7 even.
 Last Quarter, 30th, 18 m. past 5 even.

Sun enters 8
 19 d. 7 h. 7 m.

1	Tu	Easter-Tuesday	5	32	6	28	4	n	47	2	M	4	24
2	W			30		30	5	10		2	54	25	
3	Th	Richard.		28		32		33		3	37	26	
4	F	St. Ambrose		26		34		56		4	15	27	
5	S	Old Lady-Day.		24		36	6	19		4	46	28	
6	E	1 S. aft. East. Low-Sund.		22		38		41		5	12	29	
7	M			21		39	7	4		6	sets	30	
8	Tu			19		41		26		7	A. 21	1	
9	W	Orf. & Cam. Ter. beg.		17		43		48		8	47	2	
10	Th			15		45	8	11		10	13	3	
11	F			13		47		33		11	30	4	
12	S			11		49		54			Morn.	5	
13	E	2 Sunday after Easter		9		51	9	16		0	40	6	
14	M	From East. in 2 Wks. 1 Ret.		7		53		38		1	37	7	
15	Tu			5		55		59		2	24	8	
16	W	Easter Term begins		3		57	10	20		3	1	9	
17	Th			1		59		41		3	32	10	
18	F			0	7	0	11	2		3	55	11	
19	S	Alphege	4	58		2		23		4	19	12	
20	E	3 Sunday after Easter		56		4		44		4	35	13	
21	M	From East. in 3 Wks. 2 R.		54		6	12	4		4	5	14	
22	Tu			52		8		24		5	12	15	
23	W	St. George		50		10		44		6	rises	16	
24	Th			48		12	13	4		8	A. 54	17	
25	F	St. Mark. Prs. Mary bo.		47		13		23		10	5	18	
26	S	[1776.		45		15		42		11	8	19	
27	E	4 Sunday after Easter		43		17	14	2			Morn.	20	
28	M	From East. in 4 Wks. 3 R.		41		19		20		0	8	21	
29	Tu			39		21		39		1	2	22	
30	W			38		22		57		1	43	23	

Days	L. of D.	Day Inc.	D. breaks	Sun East.	Tw. ends.	Cl. bef. S.	Stars Set						
1	12	56	5	12	3	33	6	14	8	28	3 b. 47	2 A. 49	
6	13	16		32		20		21		41	2	18	31
11		34		50		6		27		55	0	54	12
16		54	6	10	2	54		33		7	0 a. 23	1	54
21	14	12		28		40		39		21	1	31	35
26		30		46		23		45		38	2	28	16

New Moon, 7th, 8 m. past 8 morn.

First Quarter, 14th, 46 m. past 7 morn.

Full Moon, 22d, 24 m. past 11 morn.

Last Quarter, 30th, 18 m. past 1 morn.

Sun enters II
zod. 7 h. 47 m.

1	Th	St. Phil. and St. James	4	36	7	24	15	15	2	M	22	24
2	F			34		26		33	2		53	25
3	S	Invention of the Cross		32		28		51	3		20	26
4	E	5 S. aft. East. Rog. Sund.		31		29	16	8	3		45	27
5	M	From East. in 5 Wks. 4 Ret.		29		31		25	4		8	28
6	Tu	John, P. Lat.		27		33		42	4	sets		29
7	W			26		34		59	7	A.	47	1
8	Th	Ascension. Holy-Thursd.		24		36	17	15	9		9	2
9	F	On Mor. of Asc. 5 Ret.		22		38		31	10		24	3
10	S			21		39		47	11		32	4
11	E	Sunday after Ascension.		19		41	18	2		Morn.		5
12	M	Easter T. ends. O. May D.		18		42		17	0		23	6
13	Tu			16		44		32	1		5	7
14	W			15		45		46	1		37	8
15	Th	Corf. Term ends		13		47	19	1	2		5	9
16	F			12		48		14	2		27	10
17	S			10		50		28	2		46	11
18	E	Whit-Sunday.		9		51		41	3		4	12
19	M	Q. Ch. b. 1744. Dunstan		7		53		54	3		22	13
20	Tu			6		54	20	6	3		40	14
21	W	Ember-Week.		5		55		19	4		0	15
22	Th	Prs. Eliz. born 1770		3		57		30	4	rises		16
23	F			2		58		42	9	A.	1	17
24	S			1		59		53	10		3	18
25	E	Trinity Sunday		0	8	0	21	4	10		59	19
26	M	Augustine. Mor. of Tr. 1 R.	3	59		1		14	11		47	20
27	Tu	Venerable Bede		57		3		24		Morn.		21
28	W	Corf. Term begins.		56		4		34	0		24	22
29	Th	Corp. Chr. K. Ch. II. Rest.		55		5		43	0		57	23
30	F	Trinity Term begins		54		6		52	1		24	24
31	S			53		7	22	1	1		47	25

Days	L. of D.	Day Inc.	D. breaks.	Sun East.	Tw. ends.	Cl. aft. S.	7 Stars So.
1	14 48	7 4	2 4	6 50	9 58	3 a. 12	0 A. 57
6	15 6	22	1 50	55	10 12	43	38
11	22	38	28	7 0	34	58	19
16	36	52	4	4	59	4 0	11 M. 59
21	50	8 6	0 24	8	11 43	3 48	40
26	16 2	9 18	No Night.	12	No Night.	23	20

New Moon, 5th, 48 m. past 3 aftern.
 First Quarter, 12th, 2 m. past 11 night.
 Full Moon, 21st, 5 m. past 1 morn.
 Last Quarter, 28th, 38 m. past 6 morn.

Sun enters ☉
 20 d. 16 h. 33 m.

1	E	1st S. aft. Trin. <i>Nicomed.</i>	3	5	2	8	8	22	n	9	2	M.	12	26
2	M	In 1 Wk. of Trin. 2 Ret.	5	1			9	17	2	33	27			
3	Tu		5	1			9	24	2	55	28			
4	W	K. Geo III. born 1738	5	0		10		31	3	23	29			
5	Th	P. Er. Aug. b. 1771. <i>Donif.</i>	5	0		11		38	4	sets	1			
6	F		4			12		44	9	A. 10	2			
7	S		4	8		12		50	10	11	3			
8	E	2 Sunday after Trinity	4	7		13		55	10	59	4			
9	M	In 2 Wks. of Trin. 3 Ret.	4	6		14	23	0	11	35	5			
10	Tu	Prs. Amelia born, 1711.	4	6		14		5	Morn.		6			
11	W	<i>St. Barnabas</i>	4	5		15		9	0	4	7			
12	Th		4	5		15		12	0	28	8			
13	F		4	4		16		16	0	49	9			
14	S		4	4		16		19	1	8	10			
15	E	3 Sunday after Trinity.	4	4		16		21	1	24	11			
16	M	In 3 Wks. of Tr. 4 Ret.	4	4		16		23	1	43	12			
17	Tu	<i>St. Alban.</i>	4	3		17		25	2	1	13			
18	W	Trinity Term ends	Longest Day, at Lond. is 16 h. 34 m. 4 sec. allowing 9 m. 16 sec. for Refraction.					27	2	23	14			
19	Th							27	2	49	15			
20	F	<i>Tr. of Edw. K. W. S.</i>						28	3	22	16			
21	S	Longest Day						28	4	rises	17			
22	E	4 Sunday after Trinity						28	9	A. 41	18			
23	M							27	10	23	19			
24	Tu	<i>St. John Baptist</i>						26	10	57	20			
25	W			4	3		17	24	11	24	21			
26	Th			4	4		16	22	11	48	22			
27	F			4	4		16	20	Morn.		23			
28	S		4	4		16		17	0	10	24			
29	E	5 S. after Trin. <i>St. Peter</i>	4	5		15		14	0	33	25			
30	M		4	5		15		10	0	54	26			

Days	L. of D.	Day Inc.	Sun East.	Cl. aft. S.	7 Stars S.	Days	L.
1	16	16	8 32	7 16	2 a. 37	10	16
6		24	40	18	1 47		6
11		30	46	19	0 49		11
16		32	48	20	0 b. 14	9	16
21		34	50	21	1 18		21
26		32	Dec. 2	20	2 21		26

New Moon, 4th, 21 m. past 12 night.

First Quarter, 12th, 34 m. past 3 aftern.

Full Moon, 20th, 52 m. past 12 noon.

Last Quarter, 27th, 55 m. past 10 morn.

Sun enters ♍
22d. 3 h. 23 m.

2	26	1	Tu	Camb. Commencement	3	46	8	14	23	n	6	1	M	18	27
3	27	2	W	Visitation of the V. Mary		46		14		2	1	50		28	
5	28	3	Th	Dog-Days begin		47		13	22	57	2	27		29	
3	29	4	F	Tr. St. Mart. Ca. T. ends		47		13		52	4	sets		30	
1		5	S	Old Midsummer-Day		48		12		46	8	A.42		1	
0	2	6	E	6 Sunday after Trinity		49		11		40	9	30		2	
1	3	7	M			49		11		34	10	0		3	
9	4	8	Tu			50		10		27	10	26		4	
5	5	9	W			51		9		20	10	48		5	
6		10	Th			52		8		12	11	7		6	
4	7	11	F			53		7		4	11	25		7	
8	8	12	S	Orford Aa		54		6	21	56	11	43		8	
9	9	13	E	7 Sunday after Trinity		55		5		47		Midn.		9	
8	10	14	M			56		4		38		Morn.		10	
4	11	15	Tu	Switbin		57		3		28	0	21		11	
3	12	16	W			58		2		19	0	44		12	
1	13	17	Th			59		1		8	1	14		13	
3	14	18	F			0	8	0	20	58	1	52		14	
9	15	19	S	Orf. Term ends		2		58		47	2	38		15	
2	16	20	E	8 S. aft. Trin. Margare:		3		57		36	4	rises		16	
8	17	21	M			4		56		24	8	A.53		17	
1	18	22	Tu	St. Mary Magdalen		5		55		12	9	24		18	
3	19	23	W			7		53		0	9	50		19	
7	20	24	Th			8		52	19	47	10	13		20	
4	21	25	F	St. James		10		50		34	10	36		21	
8	22	26	S	St. Anne, Mother of V. M.		11		49		21	10	57		22	
1	23	27	E	9 Sunday after Trinity		12		48		7	11	23		23	
0	24	28	M			14		46	18	54	11	47		24	
3	25	29	Tu			15		45		39		Morn.		25	
4	26	30	W			17		43		25	0	21		26	
		31	Th			18		42		10	1	4		27	

Stars So.	Days	L. of D.	Day dec.	D. breaks	Sun East.	Tw. ends.	Cl. bef. S.	7 Stars So.
0 M. 59	1	16 28	0 6		7 19		3 0 22	8 M. 52
35	6	22	12	No real	13	No real	4 16	32
15	11	14	20	Night.	15	Night.	5 1	11
9	16	4	30		12		35	7 51
35	21	52	42		9		55	31
15	26	38	56	0 52	5	11 4	6 2	11

New Moon, 3d, 45 m. past 10 morn.

First Quarter, 11th, at 9 morn.

Full Moon, 18th, 8 m. past 11 night.

Last Quarter, 25th, 54 m. past 3 aftern.

Sun enters 22 d. 9 h. 39 m.

1	F	Lammass	4	20	7	40	17	55	1	M	54	28
2	S			20		38		39	D	fets		29
3	E	10 Sunday after Trinity		23		37		24	7	A	57	1
4	M			25		35		8	8		27	2
5	Tu			26		34	16	51	8	51		3
6	W	Transfiguration		28		32		35	9	10		4
7	Th			30		30		18	9	30		5
8	F			31		29		1	9	47		6
9	S			33		27	15	44	10	6		7
10	E	11 S. af. Tr. St. Lawrence.		35		25		26	10	25		8
11	M	Prs. Brunf. bo. 1737. Dog Ds. end		37		23		8	10	45		9
12	Tu	Pr. of Wales bo. 1702 Old		38		22	14	50	11	14		10
13	W	[Lam.-Day		40		20		32	11	48		11
14	Th			42		18		13	Morn.			12
15	F			44		16	13	55	0	29		13
16	S	Pr. Frederick born, 1763		45		15		36	1	22		14
17	E	12 Sunday after Trinity		47		13		16	2	26		15
18	M			49		11	12	57	3	37		16
19	Tu			51		9		37	rises			17
20	W			53		7		18	8	19		18
21	Th	Pr. Wm. Henr. bo. 1765		54		6	11	58	8	43		19
22	F			56		4		37	9	6		20
23	S			58		2		17	9	28		21
24	E	13 S. aft. Tr. St. Barthol.	5	0	7	0	10	56	9	56		22
25	M			2		58		36	10	27		23
26	Tu			4		56		15	11	6		24
27	W			6		54	9	54	11	52		25
28	Th	St. Augustine		8		52		32	Morn.			26
29	F	St. John Bapt. beheaded		9		51		11	0	50		27
30	S			11		49	8	49	1	56		28
31	E	14 Sunday after Trinity		13		47		28	3	4		29

Days	L. of D.	Day dec.	D. breaks	Sun East.	Tw. ends	Cl. bef. S.	7 Stars
1	15 20	1 14	1 24	7 0	10 34	5 b. 51	6 M. 47
6	4	30	44	6 55	14	25	28
11	14 46	48	2 2	50	9 56	4 45	9
16	30	2 4	20	44	39	3 50	5 50
21	12	22	35	39	24	2 42	31
26	12 52	42	50	33	9	1 23	13

New Moon, 1st, 32 m. past 11 night.
 First Quarter, 10th, 41 m. past 2 morn.
 Full Moon, 17th, 24 m. past 8 morn.
 Last Quarter, 23d, 3 m. past 11 night.

Sun enters ♍
 22d. 6 h. 0 m.

1	M	Giles.	5	15	6	45	8	n	6	6	lets	1
2	Tu	London burnt 1666, O.S.	17	43			7	44		7	A.21	2
3	W		19	41				22		7	40	3
4	Th		21	39				0		7	58	4
5	F		23	37		6	37	8		17		5
6	S		25	35			15	8		36		6
7	E	15 S. aft. Trin. Enurchus	27	33		5	52	8		56		7
8	M	Nativity of V. Mary	29	31		30	9	22				8
9	Tu		31	29			7	9		52		9
10	W		32	28		4	44	10		30		10
11	Th		34	26		21	11	16				11
12	F		36	24		3	58			Morn.		12
13	S		38	22			35	0		12		13
14	E	16 S. aft. Tr. Holy-Cross	40	20			12	1		22		14
15	M		42	18		2	49	2		36		15
16	Tu		44	16			26	3		58		16
17	W	Ember-Week. Lambert	46	14			3	5		21		17
18	Th		48	12		1	39			2 rises		18
19	F		50	10			16	7		A.39		19
20	S		52	8		0	53	8		6		20
21	E	17 S. aft. Tr. St. Matthew	54	6			29	8		36		21
22	M	K. George III. Cor. 1761	56	4			6	9		13		22
23	Tu		58	2		of	18	9		58		23
24	W		0	0			41	10		53		24
25	Th		6	25	58	1	4	11		55		25
26	F	St. Cyprian	4	56			28			Morn.		26
27	S		6	54			51	1		4		27
28	E	18 Sunday after Trinity	8	52		2	15	2		14		28
29	M	St. Michael. Prs. Ch. Aug.	10	50			38	3		23		29
30	Tu	St. Jerome. [Mat. b. 1766	12	48		3	2	4		30		30

Day	L. of D.	Day dec.	D. breaks	Sun East.	Tw. ends.	Cl. aft. S.	7 Stars So.							
1	13	30	3	4	3	7	6	26	8	52	0	23	4	M. 51
6		10		24		21		20		38		2	0	33
11	12	52		42		34		14		25		3	41	15
16		32	4	2		45		8		14		5	26	57
21		12		22		56		2		3		7	11	40
26	11	52		42	4	7	5	55	7	52	8	53		20

New Moon; 1st, 57 m. past 2 aftern.
 First Quarter, 6th, 34 m. past 7 even.
 Full Moon, 16th, 27 m. past 5 even.
 Last Quarter, 23d, 28 m. past 9 morn.
 New Moon, 31st, 33 m. past 8 morn.

Sun enters m
 22 d. 13 h. 51 m.

1	W	Remigius	6	14	5	46	3	f	25	Q	fets	1
2	Th			16		44		48		6A.	31	2
3	F			18		42	4	12		6	49	3
4	S			20		40		35		7	8	4
5	E	19 Sunday after Trinity		22		38		58		7	32	5
6	M	Faith		24		36	5	21		8	0	6
7	Tu			25		35		44		8	34	7
8	W			27		33	6	7		9	17	8
9	Th	St. Denys		29		31		30		10	7	9
10	F	Orf. and Camb. Terms		31		29		53		11	8	10
11	S	[beg. Old Mich. Day		33		27	7	15		Morn.		11
12	E	20 Sunday after Trinity		35		25		38		0	20	12
13	M	Tr. of K. Edw. Confessor		37		23	8	0		1	36	13
14	Tu			39		21		23		2	58	14
15	W			41		19		45		4	23	15
16	Th			43		17	9	7		Q	rises	16
17	F	Etheldred		45		15		29		6A.	11	17
18	S	St. Luke		47		13		51		6	41	18
19	E	21 Sunday after Trinity		49		11	10	13		7	15	19
20	M			51		9		34		7	57	20
21	Tu			53		7		56		8	52	21
22	W			54		6	11	17		9	50	22
23	Th			56		4		38		10	59	23
24	F			58		2		59		Morn.		24
25	S	K. Geo. III. Acc. Crispin	7	0		0	12	20		0	11	25
26	E	22 S. aft. Tr. K. G. III. Pr.		2	4	58		40		1	20	26
27	M			4		56	13	1		2	28	27
28	Tu	St. Simon and St. Jude		6		54		21		3	37	28
29	W			8		52		41		4	42	29
30	Th			9		51	14	C		Q	fets	30
31	F			11		40		20		5A	19	31

Days	L. of D.	Daydec	D. breaks	Sup East.	Tw. ends.	Ch. alt. N	7 Stars
1	11	32	5	2	4	18	5 49
6		12		22		29	43
11	10	54		40		39	37
16		34	6	0		49	31
21		14		20		59	25
26	9	56		38	5	8	10
							6 51
							11 30
							11 59
							13 19
							14 26
							15 19
							55
							3 M. 4
							2 46
							27
							8
							1 50
							29

Days
1
6
11
16
21
26

First Quarter, 8th, 31 m. past 10 morn.

Full Moon, 15th, 3 m. past 3 morn.

Last Quarter, 21st, 32 m. past 11 night.

New Moon, 30th, 24 m. past 3 morn.

Sun enters ♄
21 d. 1 h. 40 m.

1	S	All Saints	7	13	+	47	14	f	39	5	A.	39	2
2	D	24 S. aft. Tr. Pr. Edw. b. 1767. <i>All</i>	15	45			58	6		6			3
3	M	Mor. of All Souls 1 R. <i>[Souls]</i>	17	43		15	17	6	36				4
4	Tu		18	42			35	7	15				5
5	W	Powder Plot, 1605, O. S.	20	40			54	8	1				6
6	Th	Michael. T. beg. <i>Leonard.</i>	22	38		16	12	8	58				7
7	F	Duke of Cumb. bo. 1745	23	37			29	10	4				8
8	S	Prs. Soph. Aug. bo. 1768	25	35			47	11	15				9
9	D	24 S. aft. Tr. Ld. Mayor's	27	33		17	4	Morn.					10
10	M	<i>[Day at Lond.]</i>	29	31			21	0	33				11
11	Tu	St. Martin	30	30			37	1	54				12
12	W	Mo. of St. Mar. 2 R. Camb.	32	28			54	3	18				13
13	Th	Britius. <i>[T. div. in M.]</i>	33	27		18	10	4	41				14
14	F		35	25			25	☾ rises					15
15	S	Machutus.	36	24			40	5	A. 6				16
16	D	25 Sunday after Trinity	38	22			55	5	46				17
17	M	Hagb. Bp. Lincoln.	40	20		19	10	6	35				18
18	Tu	In 8 Ds. of St. Mar. 3 Ret.	41	19			24	7	34				19
19	W		42	18			38	8	40				20
20	Th	Edmund, K. & M.	44	16			52	9	53				21
21	F		45	15		20	5	11	4				22
22	S	Cecilia, Old Martinm. Day	47	13			18	Morn.					23
23	D	26 Sund. aft. Tr. <i>Clement.</i>	48	12			30	0	15				24
24	M		49	11			42	1	25				25
25	Tu	D. of Glo. bo. 1743. In 15	51	9			54	2	30				26
26	W	<i>[Ds. of St. Mart. 4 Ret.]</i>	52	8		21	6	3	36				27
27	Th		53	7			16	4	41				28
28	F		54	6			27	5	48				29
29	S	Michaelmas Term ends	55	5			37	☾ sets					30
30	D	Advent Sund. St. Andrew.	56	4			47	4	A. 33				1

Days	L. of D.	Day dec.	D. breaks	Sun East.	1 w. ends	C. aft. S.	7 Stars So
1	9 34	7 0	5 17	5 12	6 42	16 a. 13	1 M. 4
6	16	18	24	7	35	6	0 44
11	0	34	32	2	28	15 38	24
16	8 44	50	37	4 57	23	14 50	3
21	30	8 4	43	52	17	13 40	11 A. 42
26	16	18	49	48	11	12 11	21

First Quarter, 7th, 48 m. past 10 night.
 Full Moon, 14th, 39 m. past 1 aftern.
 Last Quarter, 21st, 5 m. past 5 even.
 New Moon, 29th, at 10 at night.

Sun enters by
 zod. 22h. 20m.

1	M		7	57	4	3	21	56	5 A.	7	2
2	Tu			58		2	22	5	5	51	3
3	W			59		1		13	6	44	4
4	Th		8	C	C			21	7	47	5
5	F			1	3	59		29	8	55	6
6	S	Nicholas		2		58		36	10	10	7
7	E	2 Sunday in Advent		3		57		43	11	26	8
8	M	Conception of V. M.		3		57		49	Morn.		9
9	Tu			4		56		55	0	43	10
10	W			5		55	23	0	2	3	11
11	Th			5		55		5	3	25	12
12	F			6		54		9	4	52	13
13	S	Lucy		6		54		13	6	17	14
14	E	3 Sunday in Advent		7		53		17	(rises		15
15	M			7		53		20	5 A.	2	16
16	Tu	O Sapient. Camb. T. ends		7		53		22	6	8	17
17	W	Ember-Wk. Oxf. T. ends		7		53		24	7	20	18
18	Th			8		52		26	8	35	19
19	F							27	9	45	20
20	S							28	10	57	21
21	E	4 S. in Adv. St. Thomas.						28	Morn.		22
22	M	[Shortest Day.						28	0	6	23
23	Tu							27	1	13	24
24	W							26	2	18	25
25	Th	Christmas-Day						24	3	24	26
26	F	St. Stephen						22	4	30	27
27	S	St. John						19	5	36	28
28	E	Innocents. 1 S. aft. Chr.						16	6	39	29
29	M							13	(sets		1
30	Tu							9	4 A.	26	2
31	W	Silvester						4	5	25	3

Shortest Day at Lond.
 is 7 h. 44 m. 17 f.
 after allowing 9 m.
 of Retraction.

Days	L. of D.	Day dec.	D. breaks	Sun East.	Tw. ends.	Cl. aft. S.	7 Stars So.
1	8 0	8 28	5 54	4 45	6 6	10 a. 23	11 A. 0
6	7 56	38	56	43	4	8 19	10 38
11	50	44	58	41	2	6 3	16
16	46	48	6 0	40	0	3 39	9 54
21	44	50	1	39	5 59	1 10	32
26	46	Incr. 2	0	40	6 0	1 h. 20	10

CHRONOLOGICAL NOTES in 1777.

Dominical Letter	-	-	E	Shrove-Tuesday	-	Feb. 11
Golden Number	-	-	11	Easter-Day	-	March 30
Epaet	-	-	20	Whit-Sunday	-	May 18
Cycle of the Sun	-	-	22	Trinity-Sunday	-	May 25
Roman Indiction	-	-	10	Advent-Sunday	-	Nov. 30

ECLIPSES, &c. in 1777.

THIS Year affords Five Eclipses, viz. Three of the Sun, and Two of the Moon; One of each being partly visible, the other Three quite invisible in England.

1. *January 9*, in the Afternoon, the Sun eclipsed, partly visible. Begins 3 h. 49 m. Afternoon, and the Sun sets at 2 m. past 4.—*Mr. Thomas Atkinson* sent Calculations of this Eclipse.

2. *January 23*, in the Afternoon, the Moon eclipsed, partly visible. The Beginning at 2 h. 47 m. The Middle at 4 h. 11 $\frac{1}{2}$ m. The Moon rises at 4 h. 25 m. The End is at 5 h. 36 m. The Digits eclipsed being 7^o 6'.

3. *July 4*, the Sun eclipsed, invisible, a little after Midnight.

4. *July 20*, the Moon eclipsed, invisible, about Noon. The Beginning 5 m. past Noon. The Middle 0 h. 41 $\frac{1}{2}$ m. The End 1 h. 18 m. Digits eclipsed 1^o 15'.

5. *Dec. 29*, the Sun eclipsed, invisible, at 10 at Night.

Mr. Joseph Goddard, of Kirby Mallory in *Leicestershire*, has favoured us with a long Account of the Eclipses for this Year, distinguishing many curious Particulars relating to them; and has also given the following View of the Circumstances of the Eclipse of the Moon on the 23^d of *January* for *Leicester*, as computed from several different Sets of Tables.

January 23^d Day.

	Beg.	Mid.	End.	Dur.	Dig.
	h. m.	h. m.	h. m.	h. m.	o '
By the <i>Durham</i> Tables	2 43 4	4 5 25	2 42 6	58	
By <i>Lord's</i> Manuscript Tables	2 45 4	6 5 28	2 43 6	44	
By <i>Duntborne's</i> Tables	2 42 4	5 5 28	2 46 6	43	
By <i>Leadbetter's</i> Satel. Astron.	2 39 4	2 5 25	2 46 6	47	
By <i>Gael Morris's</i> Tables	2 51 4	13 5 35	2 44 6	54	
By <i>Wing's</i> Harmon. Cœlest.	2 55 4	18 5 41	2 46 6	43	
By <i>Sbackerley's</i> Brit. Tab.	2 46 4	14 5 42	2 56 7	14	

Mr. J. Tarratt sent Calculations and Types, but too late for Insertion.

Venus is an Evening Star till the 1st of *June*; and after that a Morning Star till the End of the Year.

Jupiter is an Evening Star till the 29th of *July*; and then a Morning Star for the rest of the Year.

ANSWERS to the ENIGMAS.

I. PLOW.	IV. BARRENNESS.	VII. CANDLE.
II. EAR.	V. W.	VIII. NEEDLE.
III. IMAGINATION.	VI. STAYS.	IX. or Pr. BAROMETER.

A MAN thus answers the Prize Enigma, in a Reply to a WOMAN.

See *Diary* 1776, p. 16.

The Angel ended, and in *Adam's* Ear
So charming left [her] Voice, that he awhile

Thought

Thought [*her*] still speaking, still stood fix'd to hear;
Then as new wak'd thus gratefully reply'd. MILTON.

Whoe'er thou art, that in this dark Disguise
Conceal'st thy Features from my longing Eyes;
Or *Wife* or *Widow*—since no more a *Maid*—
No more I chase thee through th' impervious Shade.
Hail, WOMAN, lovely WOMAN, then!—
Source of our best, our purest Bliss below!
That ALL of Heav'n which Mortals here can know!
'To thee I call, and with a friendly Voice.'—

O could I 'add thy Name!'—I'd then rejoice
The grateful Tribute of one Line to pay,
For thy humane, thy sympathetic Lay.
Free as my Sentiments my Verse shou'd flow,
To hymn the Breast which melts at others' Woe:
T' exhort each giddy, each unfeeling she,
This great, this useful Truth, to learn from Thee—
That Woman's first, best Praise is—*Sensibility*! }

The MERCURY IN THE TUBE less clearly shews
The rising Tempests and descending Snows,
Than does thy polish'd Pen in every Line,
That every Female Excellence is thine!

The same answered by Mrs. Lacey.

When dark and gloomy Clouds appear, To th' *Weather-glass* then turn your
And you suspect that Storms are near, For that discovers *Tasso's* Prize. [Eyes,

The same by Miss Blanch Harris, near Redruth.

Tasso, the Muses' Darling, from whose Quill
Spontaneous flow Strains of superior Skill;
Great Rival of your Predecessor's Fame,
To be your Heroine fain I would lay claim:
Though Female, such my Courage, I would tread
Th' enchanted Forest without Fear or Dread.
Permit me your *Rinaldo* then to be,
And try to fell this wond'rous Myrtle Tree.
Undaunted I'll proceed, all Horrors dare;
The Oracle, though dumb, force to declare
Its secret Name,—and groan *Barometer*. }

Mr. M. Applin thus answers the same.

<i>Cloe</i> , your often-varying Face	But the Quicksilver of a Smile
An Emblem's of the <i>Weather-glass</i> ;	Disrobes it of its clouded Veil; [high,
Whene'er you meet me with a Frown,	My Hopes, my Passions, then mount
My Heart is with Despair sunk down;	Warm'd by the Sunshine of your Eye.

It is thus answered by Miss Charlotte Elaeu.

Nor Art can paint, nor Language can convey,
In prettier Style, or more exalted Lay,
A livelier Trait, in mystic Garb array'd,
Than what's in *Tasso's Baroscope* display'd.

Levinus thus answers the same.

When wet or dry, when cold or hot,	The Index of the <i>Weather-glass</i>
Are you inclin'd to know?	Right-well to you will shew.

The same also answered by Mr. M. ZELFORD:

All hail to Tasso's enigmatic lines,
Where beauty with elegance and wit combines,
To please the soul, to captivate the heart,
And, in disguise, a *weather-glass* impart.

ADONIS thus answers the same.

Among the productions compil'd for each year,
What palpable wrongs in the *weather* appear.
There Diaria is modest, and wisely friend Tass,
As the safest and surest, proposes a *glass*.

Ingenious and particular answers were also given by Messrs. *Abel, Rev. Mr. Baker, Tho. Baker, G. Beswick, G. Biggs, R. Bloxham, R. Brown, T. Cballans, Ho. Clark, J. Clarke, B. Cleypole, Coelebs, Colinius, J. Collins, Dr. Conundrum, W. Crealock, Crito, R. Cunningham, I. D., J. Davies, J. Dredge, J. East, W. Exall, W. Francis, H. Gianville, G. Holden, J. Hunt, F. K. W. Kippax, Miss A. Lamb, Mrs. Lacey, G. Lacey, Miss Peggy Lugg, J. Malbam, Maritus, C. Metcalf, Mechanicus, Cordelia Neville, Miss Polly Oliver, A. Pace, J. Pepper, Philarithmus, Philomathes, J. Read, R. Richardson, T. Rogers, A. Rowe, Rowlev, Rustica, Rustick, R. S, J. Sharman, G. Simpkin, E. Smith, W. Swift, Traveller, T. Truswell, Tyro, L. Walker, T. Woodman, Robert Younge, and others.*

To the Memory of Narcissa by Crito, in a general Answer to all the Ænigmas.

In sable robes attend, ye nymphs and swains;
With yew and cypress strew the sorrowing plains;
Let every flower recline its drooping head;
The pride of nymphs, the fair Narcissa's dead!
Accept, blest shade, least abler pens refuse,
This humble tribute from the plaintive muse.

But ah! the mournful subject to disclose,
A subject big with complicated woes!
The grief-exciting story to rehearse
Requires a Bentley's or a Tasso's verse.
That fatal day we ever must deplore,
When, urg'd by fate, thou left'st Britannia's shore,
Plow'd the deep ocean's rude impetuous tide,
And for Iberia's coast the waves divide.
Scarce had the vessel felt the rising gales,
Heav'd her large anchor and unfurl'd her sails,
When clouds on clouds in swift succession sweep,
And winds convulse the sable-vested deep.
The NEEDLE's aid and pilot's art are vain,
The storm still blackens and o'erspreads the main;
The shatte'rd bark before the tempest rides,
While furious billows burst around her sides.

B

5
Fear

Fear and dismay now glare in every eye,
 And all with suppliant hands implore the sky.
 In vain; for like the GLASS they rise and fall,
 'Till one vast wat'ry ruin swallows all. —
 Farewell, sweet saint! — In that black dreadful day,
 When conscious VIRTUE was the only STAY,
 Calm and serene amid the dire alarm,
 Possessing her, thou found'st a powerful charm;
 A charm that could the fear of Death destroy,
 And turn the liquid horrors into joy;
 Could burst the confines of impervious night,
 And wing thy passage to the realms of Light.

allud. to 4 enig.

Then imitate her virtues; for 'twas she
 Whose EAR was open, and whose heart was free;
 Whose gentle bosom glow'd with rapt'rous fire,
 Whose fingers swept the soft Diarian lyre;
 Whose smoothly-flowing, sweet harmonious lays
 Demand a wreath of never-fading bays.
 Ye lovely virgins, prize th'illustrious name,
 Pursue her steps, and emulate her fame.

allud. to 3

The same answered by the Rev. Mr. Tho. Baker. Addressed to Miss C. C.

Mourn not, dear maid, the year that's	Old time flies swift; for none it
past :	STAYS,
The next will fly away as fast	Therefore let us improve our days;
As that so lately gone —	Which are but few, at most;
Now, what a nothing it appears!	For, should the fatal night come on,
So will a life of fourscore years,	Before th'important work is done,
When our great change comes on.	We are for ever lost!
The frosted head, the furrow'd	Oil for our lamps will far surpass
cheek,	The NEEDLE or the WEATHER
The fault'ring tongue that scarce can	GLASS,
speak,	When we resign our breath;
All bid us lend an EAR :	True faith and holiness of heart
'Tis Wisdom's voice, not FANCY's	Will then alone pure joys impart,
cry,	And ease the pains of death.
That says, 'All flesh is born to die';	
And death is always near.	

Dr. Conundrum thus answers the same in a dialogue with Mr. G. Lacy

C. Here, Thomas, a CANDLE! — See who's at the door, —
 Make haste. — Such a loiterer I ne'er knew before.
 L. Dear Doctor, your servant. C. Old friend, is it you?
 You are welcome to Taunton. Pray, how do you do?
 L. So, so, Sir, I thank you. C. But how got you hither?
 L. Why, 'faith, thro' bad roads and confounded cold weather.
 C. Then I fancy — Dear Lacey, sit NEARER the fire, —
 That your spirits a glass of good punch must require. —
 So, you've stolen a wedding! Well heav'n speed the Plow!
 May fertility crown the connubial vow!

L. And

L. Amen to that pray'r! — Come, the toast of Pentyn.

C. What, my good-natur'd Peggy? I'd pledge you in gin.

Is she married or single? L. Still single I doubt.

C. Why what are those Cornish gallants, Sir, about?

Before this fair daughter of beauty and bays

Should in lonely *Virginity* spend her best days,

I'd turn suitor myself, learn to sigh and adore—

If I thought she'd accept of a youth of threescore.

L. Have you seen the last Diary? O! yonder it lies.

May I ask what conjecture you've form'd of the prize?

C. A plague on this Tasso! To find out his riddle,

One had need have one's senses as sharp as a NEEDLE.

L. And yours, my old friend, I may guess, at these days,

Are—C. As blunt as the skirts of your grandmother's STRAYS.

L. If I'm right, 'tis a vane. C. Then you're wrong, I protest.

'Tis a dial. L. You DREAM, or are surely in jest.

C. Hold! Let me consider.—One thought, and I've done.—

Is it not a BAROMETER? L. Fifty to one.

You have hit it, dear Doctor, as sure as a gun.

*The same answered by Miss Polly Oliver of Beamister. Addressed to
Mr. and Mrs. Lacey on their late nuptials.*

Happy Lacey! Joy to thee!

Joy to Mrs. Lacey be!

May this bring you sweet content,

Time in useful study spent,

If on PLOWS or EARS you write, 1, 2

Or IMAGINATION's flight, 3

BARRENNESS or W, 4, 5

STAYS, and CANDLE, NEEDLES

too; 6, 7, 8

Or if easy you declare

Tasso's true BAROMETER, Pr.

Happy Lacey, joy to thee!

Joy to Mrs. Lacey be!

Joy by day, and joy by night,

Paradises of delight!

Let Diaria's daughters known

Drop to both a curtsy down;

While her bending sons rejoice,

Withing both unnumber'd joys.

Miss Peggy Lugg thus answers the same.

Barren's IMAGINATION sure 4, 3

When time a torment proves,

When company's the spirits' cure!

—This reason disapproves.

Wish'd pass, wish'd back is time, alas!

By frail unthinking man,

Who madly leaves the present pass;

So wrong the gen'ral plan.

Stay! giddy souls! — give EAR a-

while 6, 2

To what the healthy swains 5

Declare of life — who FLOW and

oil, 1

And trip it o'er yon plains.

Or Lacey view, th'admired youth!

By him your conduct set;

There's wisdom's lamp, there's can-

did truth,

There all that's generous met.

A spouse, who, wise as well as fair,

Improves the vital flame 7

Not at her GLASS — this happy

pair Pr.

Such specious arts disclaim.

Ladies, while at the NEEDLE you 8

Your matchless skill display,

I Think! time is short! and may the

view

Be present night and day!

The same by Mr. Robert Richardson. On Miss — —'s Birth-day.

Muse, strike the lyre : Clarinda's natal day
 Demands my warmest, most exalted lay. —
 Ye sacred choir, your genial influence pour
 On this auspicious, this important hour. —
 From the bright east, see radiant Sol arise,
 And with redoubled *lustre* glad the skies :
 The humid vapours fly his *piercing* light,
 To the dark regions of succeeding night ;
 While the fair *earth's* with fresher verdure crown'd,
 And livelier *flowrets* deck th'ennamell'd ground —
 Ye warbling throng, ye habitants of earth,
 Bless, bless the day that *gave* Clarinda *birth* !
 Nor will my fair refuse to lend an *EAR*,
 Or scorn a swain whose wishes are sincere.
 May heav'n in kind compliance hear my prayer !
 May'st thou be happy as thyself art fair !
 May each succeeding year more pleasing prove ;
 Stranger to ev'ry care but those of love !
 And if by fate thou'rt destin'd e'er to wed,
 May genial pleasures grace the nuptial bed !
 And as in thee he finds a virtuous wife,
 The joy, the *Stay*, the comfort of his life,
 So in thy happy swain, O may'st thou prove
 The kind indulgence of reflected love !
 And may the years, successive as they roll,
 With no *prophetic omens* damp the soul ;
 But pleasing hopes still reign in thy fair breast :
 Nor *thoughts* perplex, nor anxious fears molest !

The same answered by Mr. Giles Lacey. In advice to fair Susan.

<p>BARREN is IMAGINATION 4, 3 To conceive why, Susan, you Should for Ralph the Plowman languish, 1 When the shepherd is more true. Ralph will change just as the <i>Wear-</i> <i>ther</i> ; Er. Count his votus of little worth 5</p>	<p>Strephon loves you—he'll prove con- stant As the NEEDLE to the north, 8 Lend an EAR then to your mother ; 1 Let her counsel be your STAY : 6 Like a TAPER, 'twill direct you — 7 Thro' youth's dang'rous, slip'ry way.</p>
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Mr. Thomas Watkins thus answers the same.

Let princes, e'er ambitious of a name,
 With ardent grasp embrace the phantom fame ;
 Form great designs, and regal honours view,
 While blood of thousands guilty hands imbrue.
 Let commerce still o'er Britain's fertile isle
 In all the god-like pomp of plenty smile ;
 Her sons, led on by pleasing hopes of gain,
Plow the deep ocean and explore the main.

Let sages view, with astronomic eyes,
Each splendid orb within the boundless skies;
O'er earth and seas unwearied may they run,
And trace each planet round the central sun.

The needy miser ample bags unfold,
And view his god in base metallic gold;
Still let him seek the regions of despair,
And still in wealth possess the demon care.

Free as the air, and constant as the dove,
Be mine to range o'er all the fields of love;
From discord's hateful scenes and wars alarms,
To sink enraptur'd in some female's arms.

As Venus fair of ev'ry grace possest,
Perfect as Pallas, and as Hebe blest:

May ne'er her reason solid good oppose,
Nor vain desires creative wants disclose;
But still with FANCY may her judgment blend,
And all the lover center in the friend:

Neat without *pomp*, in plain apparel gay,
Content to grace with NEEDLE-work her STAY.

As burns the TORCH, so let her virtue shine,
In all the blaze of purity divine.

3.

Prize.

4.

3.

2.

8. 6.

7.

CONTENTMENT IN A COTTAGE. *Answering the Enigma, by Illiterate.*

As honest, loving, happy pair,
As e'er did STAYS and breeches wear,

Are plodding Ned and busy Sue,
Each dutifully kind and true.
Their humble cot is wall'd with clay;
No painted WEATHER-GLASS have they;

But what is useful, neat, and clean,
May throughout ev'ry part be seen.
Ned to his PLOW each morning hies,
And whistling bids the sun arise;
Nor long does Sue behind him stay,
For tow'rs the farm she bends her way,

Bearing her jug for breakfast broth,
And Dame to lend her EAR isn't closh;

Then home she goes, and cleans her house,

Works at her NEEDLE till her spouse,

With labour, tir'd, returns at night,
Inspiring Susan with delight;

And when they've supp'd on simple diet,

Retire unto their bed in quiet;
Where FANCY ne'er disturbs their brain,

Nor CANDLE burns all night in vain;

But SWEET repose is shelter'd there,
Nor fear they death, nor know they care.

Mr. R. Bloxham thus answers the same.

Rise, my muse, to lofty strain,
Smooth alternate accents get;
Sing the charmer of the plain,
Sing the praise of Amoret.

One that might with her compare
Never, never saw I yet!
Such a Shape! with such an air!
Sing the praise of Amoret.

B 3

To

To illuminate her mind,
Each superior grace is met;
You that are to mirth inclin'd
Sing the praise of Amoret.
Ruddy swains, who tend the Plow,
With your brows bedew'd with sweat;
Pret y nymphs, who drip the cow,
Sing the praise of Amoret.

Belles, who bright as Lamps appear,
At your NEEDLE while you sit,

Let your voices rend the EAR,
Sing the praise of Amoret.
Beaux, who rove from lafs to Lefs,
With new FANCIES oft beset,
Fickle as the WEATHER-GLASS,
Sing the praise of Amoret.
I to love can never cease,
Till I pay the Comm'n-debt;
Nor can aught these words efface;
Sing the praise of Amoret.

Ingenious general answers were also given by Messrs. *Adonis, Adrian T. Baker, J. Bayley, G. Beswick, Ho. Clark, Cælebs, T. Coxen, W. Crealock, R. Cunningham, R. Dening, J. Dubber, R. Dutton, J. East, W. Exall, W. Francis, J. Guddard, J. Goodaker, J. Gumley, Miss Blanch Harris, G. Holden, J. Howell, J. Hunt, W. King, W. Kippax, W. Loftbouse, T. M. Marcus, Mechanicus, J. Needham, J. Pepper, Philarithmus, Philomathes, S. Roberts, Rowley, J. Sbarman, E. Smith, Mrs. S. Suggett, Trufwell, Tyro, L. Walker, W. Wallace, S. Williams, T. Wood, Woodbouse,* and many others.

ANSWERS to the QUERIES and REBUSES.

I. QUERY answered by the Rev. Mr. Baker.

The man that's to religion true,
Will always be the same to you.

Should such an one his flame discover,
You need not doubt a *real* lover.

The same is thus answered by Mr. Rob. Young.

Thus, gentle maid, unfold your swain's designs,
Prove the fond flame, or trace the flatterer's lines,
When ready praises more than truth declare,
Loquacious folly; think delusion there.
Gay trifling airs a heart unwounded prove.
But rev'rence marks the timid voice of love.

Dr. Conundrum thus answers the same.

There is not perhaps a better criterion of the sincerity of a lover's profession, than character; for, however justly a profligate may be suspected of falsehood, a man of probity can never act the deceiver. But character, the fair querist may object, is frequently equivocal. It is so; and in that case I see not how a lady can attain the desired knowledge, but by putting her admirer to the test. A man cannot I think give a better proof of the reality of his passion, than by resigning his freedom. But how far such a step is consistent with prudence must be determined by circumstances.

On the same subject, Mr. Jos. Hunt remarks that

The real lover will be plain, honest, and sincere; his desires will be limited; they will extend no farther than the strictest rules of honour and honesty. On the contrary, the flatterer will be profuse in his protestations of love, and in his seeming admiration of the amiableness of your person, till he imagines he has raised your vanity to a pitch sufficient to gain him the gratification of his unlawful desires. In short, while the latter is employ'd in praising the superficial beauties of your person, the former will admire the more substantial ones of the mind. — Ingenious answers were also given by Messrs. *Cælebs*, *R. Dutton*, *M. Ellob*, *Philomatbes*, *A. Rowe*, *Rowley*, *W. Swift*, *Traveller*, and *W. Wallace*.

II. QUERY answered by Dr. Conundrum.

The mutual and inveterate hatred of the dukes of York and Somerset cannot but be known to every reader of the English history. These noblemen (according to Shakespeare, who has wrought this circumstance into a scene) were walking together in a garden; when an altercation arising, the duke of York gathered a white rose, and the duke of Somerset a red, which they severally proposed as badges of distinction to be worn by their respective partisans. But the king favouring the latter, and the private quarrel of York and Somerset terminating in the grand national contest of Lancaster and York, the red rose became in consequence the general device of the Lancastrian party. — *Mr. Alex. Rowe* and *Mr. Ri. Rowley*, answered it in like manner.

III. QUERY answered by Cælebs and Mr. J. Hunt.

That the idea of wit is reducible to language, appears from the following account of it as given by the famous Mr. Locke, viz. that 'It is a faculty of the mind, consisting in the assembling and putting together of those ideas with quickness and variety, in which any resemblance or congruity can be found in order to form pleasant pictures and agreeable visions to the fancy.' This faculty, the same author observes, 'is just the contrary of judgment, which consists in the separating carefully from one another, such ideas wherein can be found the least difference, thereby to avoid being misled by similitude and affinity to take one thing for another. It is the metaphor and allusion, wherein, for the most part, lies the entertainment and pleasantry of wit, which strikes so lively on the fancy, and is therefore so acceptable to all people, because its beauty appears at first sight, and there is required no labour of thought to examine what truth or reason there is in it. The mind, without looking any farther, rests satisfied with the agreeableness of the picture, and the gaiety of the imagination; it is a kind of affront to go about to examine it by the severe rules of truth or reason.'

Mr. Rowe answered it by the same quotation, and by others from *Pope* and *Thomson*. It was also answered by *Philomatbes*, *Ri. Rowley*, and *R:b. Young*.

IV. QUERY answered.

On the subject of this query our learned and ingenious correspondents are of various opinions, some positively insisting on the existence and appearance of such spirits, while some as roundly deny both, and many others hold a kind of middle opinion between both.

Dr. *Comendrum* reasons thus. 'That the soul can quit her corporal residence before the dissolution of the body, is an hypothesis which only the ignorant and absurd would pretend to maintain; nor is the notion of unquiet spirits appearing after death in any respect reconcilable to right reason. That there have however been apparitions on certain great and important occasions, I will readily allow; and indeed we have some relations so well attested, that to reject all belief of preternatural appearances, argues a degree of scepticism altogether unreasonable. But these apparitions I rather consider as angelic intelligences, assuming by divine command the resemblance of departed persons, to deter, admonish, or direct mankind; a commission highly suitable to their scriptural office, as the messengers or ambassadors of God.'

Mr. *Joseph Hunt* seems to be nearly of the same opinion. He adduces several important instances of celestial apparitions from scripture, and then sarcastically adds, As for the opinion of the vulgar, in regard to people's appearing to us in their usual form and habit after their decease, for no other reason than because their estates have been misapplied, it is to me the greatest absurdity, and appears to be only the invention of knaves to affright fools with: For, were the Almighty to permit them to be sensible of such a misconduct of the living, and to return to terrify them merely for that reason, there is too much room to imagine that the number of deceased on the earth would almost exceed that of the living.

Mr. *Wm. Wallace* quotes extracts from the writings of the illustrious Mr. *Locke* and Mr. *Wollaston*, to shew that there are or may be spiritual beings, but that they cannot be manifested to us by our senses.—Messrs. *Cælius*, *Dutton*, *Rowe*, *Rowley*, *Traveller*, *Wilton*, and *Young*, then give their several opinions *pro* and *con*. Also Mr. *Wm. Swift* relates a tale from an old MS. of a Parson being met by an old man who told him of the day of his death; but which we must omit, in order to make room for the following extraordinary letter on the subject, as a living instance, which we shall leave every one to make his own reflections on.

'Sir,—Reading the 4th Query in your Diary, induced me to write you this letter—About 14 years since, I had a son, then between 8 and 9 years old, who died of a fever at Repton school in Derbyshire, where I had placed him a very little time before, for his education. In a month or two after his death, one morning between 11 and 12 o'clock, I saw him distinctly in his bodily shape, and in all respects as when he was alive, when he spoke to me the following words, which he pronounced in the very same natural voice as when living; "Papa, I am happy, and so will you be too;" and then immediately disappeared. These words diffused such a joy in me, as is easier for a benevolent heart to conceive than for any words to express—I am, Sir, your most humble servant,

THOMAS BRITAIN

Co. Hill, March 15, 1776.

V. QUERY

V. QUERY answered by Dr. Compendrum.

The person with a false deluding tongue, and the bold impudent liar, are equally the enemies of truth. Their particular and specific qualities are cunning and effrontery. The one, with cautious subtilty, dresses falsehood in the fairest and most plausible colours: The other broaches the most open and glaring lyes, without the least shame or concern. This short analysis will assist us in forming a right estimation of the two characters. The first may be the most dangerous, but the latter is certainly the more contemptible.——Mr. R. Young is nearly of the same opinion; but most of the following persons, who answered it, are of the contrary opinion, viz. *Cælebs, Dening, Dutton, Hunt, Leckenby, Mechanicus, Pauly, Philomathes, Ray, Pepper, Swift, Traveller, Wallace, and Wilton*, whose ingenious answers must be omitted for want of room.

The REBUSES answered by Marcus of Carlisle.

Permit me, Diarion bards, to REPEAT	1
What all my fond pleasures are built on;	
Admit a young muse to your poetic treat,	
Where each writes the verse of a Milton.	2
Receive then amongst you so humble a maid,	
With Diaria's garments invest her;	
And (HEALTH, wit, and beauty my intimates made)	3
I'll envy nor TANFIELD nor CHESTER.	

The Rev. Mr. Baker thus answers the same.

Miss PEET may be handsome as far as I know,	1
And Miss MILTON of Kendal be fair;	2
But HEALTH is the choicest of blessings below,	3
As the ladies of TANFIELD and CHESTER can shew,	4, 5.
So I wish them a happy new year.	

Philomathes thus answers the same.

O had I MILTON's muse and perfect HEALTH,	2, 3.
Best gifts on earth by God's rich bounty giv'n!	
To fill my CHEST, I'd not wish TANFIELD's wealth;	5, 4.
My thoughts, refin'd like PEET's shou'd soar to heav'n	1

They are thus answered by Mr. Isaac Gumley.

Misses MILTON and PEET, those sweet pretty lasses,
With HEALTH in their looks, that all painting surpasses,
Can ne'er be excell'd, I durst wager a tester,
By all the fine ladies of TANFIELD and CHESTER.

Traveller thus answers the same.

At Chester and Tanfield I've been,	Miss Milton and Peet I have seen,
Where, Healthful and blooming and gay,	For beauty unrival'd by May.

Various other ingenious answers were given by Messrs. Bayley, Cælebs, Crakch, Dubber, Elfish, R. F. Miss Harris, Howell, Leckenby, Lysius, Needham, Pepper, Philarithmus, Richardson, Roberts, Swift, Rowe, Rowley, Wallace, Williams, Wilton and Wood.

NEW

NEW ENIGMAS.

I. ENIGMA 572, by Cælebs.

Ye lovely fair, to whose discerning eyes
The darkest riddles prove a weak disguise,
Whose piercing wit can veil in flowing lines
Whatever subjects your prompt will inclines;
Permit your well-known fav'rite now to share
A place within the list of fame this year.

From distant climes to Britain's fertile shore,
Cross Neptune's briny deep, am I brought o'er:
And here, oh hard to tell, dire scenes of woe,
Sharp fir'y trials doom'd to undergo.

I various conflicts meet: at length I bear
The present pleasing from which now I wear.

When Damon, with persuasive arts to move,
Pleads all the pleasing eloquence of love,
With sighs invokes the gentle god, to dart
His pointed shaft, to wound his charmer's heart;
Should he successful prove and win the dame,
I with his ardent wishes crown his flame.

Then ten to one shou'd Damon with his bride
But chance to walk, attending by her side
You there may find me; since 'tis known thro' life,
'That I a close companion am unto the wife:
A faithful witness of the blest estate
For which God at the first did man create.

Take this one hint, to throw off all disguise,
I am the widow's pledge, and maiden's prize.

II. ENIGMA 573. by Mr. Thomas Rogers of Cestock.

Pray ladies, don't at me take fright,	Always at work, so ne'er at play.
For tho' I snarl, I never bite:	Adhere to truth—no one that's by
And tho' with you partake of breath,	Has ever caught me in a lye.
I never shall be caught by death.	To rich and poor my aid I lend,
I always do attend the fair,	And am to both an equal friend.
Asleep or wake, I'm in their care.	Useful am to all about me,
In ev'ry corner in the nation,	No riddle's ever made without me
It is well known I have a station.	I am a liquid—hold—no more;
In learning also have great sway,	You will with ease my name explore

III. ENIGMA 574 by Mr. H. Thirlwall of Darlington.

When to the western ocean rolls the light,
And th' æthereal waste is wrapt in night,
While twinkling stars re-light their silver beams,
And heav'nly lustre from each planet streams,
As em'lous of their glory I display,
By darkness visible, the glowing ray.

Small and illusive is my boasted fire;
 Incommunicative, distinct, entire,
 Thro' rushes dry'd by parching winds may stray,
 Or leaves scorch'd by the fervid solar-ray;
 The leaves and rushes still may rest secure,
 Nor kindle into flames beneath my pow'r.
 I've rest, I've motion, sense, and vital breath;
 Like man am subject to the stroke of death.
 T'earth's bowels I descend, and silent move,
 Or slowly penetrate the thickest grove;
 In unfrequented wilds and grots I stray,
 Impenetrable to the beams of day;
 Beneath the fretted roof with moss o'ergrown,
 Where am'rous ivy clasps the rugged stone;
 Where the sequest'ed sage and hermit dwell,
 And plaintive woes repeating echoes tell.
 Ah! human vestiges, sure, certain foes,
 I dread where'er the pious hermit goes
 With eyes uplifted to the blest abode,
 With thoughts intent on nature or on God;
 Unknown to him, beneath his feet expire
 At once the lamp of life and vivid fire.

IV. ENIGMA 575, by Mr. J. Goodaker.

If all the stories poets feign were true;
 Such as the Minotaur and Cretan clue,
 The Sphinx, the Dragon, and th' Hesperian prize,
 The dread Chimera, Argus' hundred eyes,
 The serpent's teeth, and Circe's direful charms;
 Your hearts would often pant with fresh alarms:
 But, fable all, no horrors they excite,
 Since only real prodigies affright.

Yet start not, ladies, tho' a monster's come,
 Who thro' all England takes his annual roam.

To form me first, the elements combin'd,
 And heat and cold with earth and water join'd.
 Are nature's works compleat? Then turn and see,
 You'll find a strange phænomenon in me!

Horrid am I: huge, slow, crawling on the ground,
 Nor head, nor arms, nor body to be found;
 Void of all parts which constitute a frame,

A group of teeth and ribs I only claim:
 Like shatter'd ruins, melancholy view!

So lean and meagre, I am seen quite through.
 With iron fangs, I prowl in search of pray,
 Seize it and leave it, toilsome task! each day.
 Thro' me in part are mortals blest with bread,
 Yet, ingrates! I'm not with a morsel fed;

Nay

Nay us'd still worse, — by human hands I'm ta'en
 From where I peaceful halt my time remain,
 Shackled in galling chains, and dragg'd about
 By thoughtless brutes, till all my strength's worn out;
 Then, gall'd with annual toil, to nought return,
 Or else at Christmas on some fire I burn.

V. ENIGMA 577, by Mr. Giles Lacey.

Makeroom — stand back — keep your distance —	Thousands of ev'ry rank and station
Who that dares to make resistance?	In this and almost ev'ry nation,
Don't I sufficient witness bring	With tame submission me obey,
To testify that I'm a king?	So great, so pow'ful is my sway.
No title can be fix'd to me	Some to my yoke reluctant bend,
A little short of majesty;	Struggle their freedom to defend:
For I with arbitrary rule,	But without caution's timely aid,
Govern the wise man and the fool;	All striving's vain, they're vassal
And tho' am bound and closely ty'd,	made.
My Government's extended wide;	Yet tho' so much of ruling said in,
	I am your humble servant, ladies.

VI. ENIGMA, 577, by Mr. French Johnson.

Two foreigners of equal rank and age
 Claim the protection of Diaria's page,
 As denizens of Britain years ago,
 Where freedom reigns, from whence great blessings flow.
 Friendship with us does always plain appear,
 Tho' close confin'd some seasons of the year.
 The vernal bloom, as well the summer scene,
 The varied notes amidst the leafy green,
 Or rich Pomona with her juicy store,
 Are lost on us, and tasteless in their pow'r.
 But when Favonius with a gentle breeze
 Plays on the beach, or, whisp'ring in the trees,
 By surly Boreas, or, the keener east,
 Is driv'n with fury to the milder west;
 Succeeding winds in icy currents flow
 From the vast regions of eternal snow,
 O'er the glaz'd mountains; with alarming pace
 Glance on the tops, or cut along the base:
 When these unerring tokens once appear,
 Happy prognostic! liberty is near.
 Freed from confinement, dangling we advance
 To act in concert thro' a mazy dance
 On a large chamber, so divinely grand,
 That marks the builder was no vulgar hand:
 No lofty pillars here support the room,
 Nor aught material in the vaulted dome:
 With rapid motion and a graceful sweep,
 We measure space, and equal distance keep;

In nice direction thro' the vast design,
We angles form, as well the spiral line;
In circles, squares, with Euclid's self can vie,
And form new figures in geometry:
Yet still preserve a friendship thro' the whole,
In rest or play we're always cheek-by-jowl —
The frolic o'er, we're ty'd by neck and heels;
Judge, from confinement, what a pris'ner feels!
Seasons return, to us return in vain,
Cast off nine months before we sport again.

VIII. ENIGMA 579, by the Rev. Mr. Baken.

I am a trav'ller, ladies, was at sea,
On board the Royal George and Victory.
Not so by choice: The admiral and his guest
Commanded, and I instantly was prest.

Driv'n from the Downs and all my dear-lov'd train,
I bade adieu to Britain's fertile plain;
A helpless mother from my offspring tore,
And their dear father I shall see no more!
While he, poor cuckold, (tho' not horn'd by me)
Enjoys my sister and his liberty.

Like Africk's slaves, I'm to such masters sold,
As shew no mercy but t'increase their gold;
The better I to serve their ends agree,
The sooner they conspire to ruin me.
Such is my fate at present; tho' of old
I was esteem'd by heroes brave and bold;
A valiant youth, who armies put to flight,
Fed me all day, and gave me drink at night;
He knew my worth, and so do many more,
For I the hungry feed, and clothe the poor.
And you, dear ladies, oft require my aid,
All in your turns, the widow, wife, and maid;
From me new charms adorn the rising head,
And my dark grave is oft in your warm bed.
Such is my worth, my diligence, and care,
I die to serve you, O ye charming fair.

From four-and-twenty brothers, known to fame,
Take only two, and they will shew my name;
Backward or forward, equally agree,
Which way you please, 'tis all the same to me.

IX. ENIGMA 580, by Doctor Conundrum.

Forgive, ye fair, a plain well-mean-
ing friend, [commend.
That to your notice would himself
Perhaps indeed for me 'tis impolite,
Indecent to approach a lady's sight.

So custom changes! When Eliza
reign'd, gain'd;
At court I flourish'd, and admirers
Then neatly fash'on'd, and as neatly
dress'd.

The

The ladies lik'd me ;—yet the lords
 possess'd. [grace,
 Fav'rite of man, by heav'n's peculiar
 With him I held a high exalted
 place ; [led,
 And still attendant wherefoe'er he
 Now mourn'd in sable, and now
 flam'd in red ; [the sight,
 Array'd in modest brown now met
 Or trail'd a rev'rend length of silver
 white. [me high,
 Grave sixty knew me long, and priz'd
 And on his aged bosom let me lie ;
 While, in my new acquaintance hap-
 py grown, [smooth'd me down.
 With gentle touch the stripling
 But, time alas! has robb'd me of
 my fame, [name :
 And Britain sees me dwindled to a
 Yet not forlorn, some honour still I
 boast, [lost.
 And hold my office tho' my state is
 Still am I courted by the young and
 gay, [lost away ;
 Who, strange! to gain me, throw me
 For such my humour is, however
 rude, [intrude.
 Where most I meet repulse, I most
 Sometimes unsought among the fair
 I slip,
 And steal the favour of a lady's lip ;

But squeamish beau, avoid her eye
 more, [b far
 Nor care to touch what I have touch'd
 One deadly foe, destroyer of my
 race,
 I fear, yet fearing seek his face.
 Suppose me near a lake, whose pe-
 rish'd marge [large
 Circles a field of waters deep
 Think that you hear the angry bil-
 lows roar, [neigh'bring thunders
 And see them swell and threaten
 Think you behold the master of my
 fate, [create
 (Who, while he kills, professes
 Prepar'd with rude assault to make
 me feel
 The double force of water and of steel
 Alike unable to resist or fly,
 Beneath the gath'ring foam o'er-
 whelm'd I lie ; [descend
 While from aloft the glitter'ing blades
 And on my mangled corps its force
 spends. [knives
 Yet, spite of water and the murd'ring
 Se me with native vigour spring
 life ; [arise
 And, ere the god of day sev'n times
 His western goal, my former shape
 regain.

X. *THE PRIZE ENIGMA*, 581, by Mr. Samuel Bentley.

Ye heralds so nice, and ye wits of the age,
 Who dare any difficult subject engage,
 Come view my devices, and blazon my coat ;
 My num'rous relations and I are of note ;
 And tho' not ennobled, it often appears,
 We some of us boast of our rank before peers.
 Where'er I appear I've a partner attending,
 Unless I'm thro' poverty near to an ending,
 Or brought by misfortune to sudden decay,
 For then 'tis adieu! and he slips quite away :
 Ingratitude surely you'll say has possess'd him,
 Since hung round his neck I've so often caress'd him.
 A dextrous artist our plates provides,
 And as we are station'd on opposite sides,
 Like guarding supporters both of us look bold,
 Are sometimes in silver, or both clad in gold,

Are often quite plain, now in silk, now in leather,
And seen cheek-by-jowl both a-begging together;
But why should we beg, since we never eat bread,
For he's *head* without *moutb*, and I've *moutb* without *head*.
When I'm plac'd upon *arms*, whatsoever my hue,
On right side or left, it is *heraldry* true:
But if on the front of my *coat* you shou'd pry,
And canvas my *quarters* with critical eye,
These wonderful properties to me belong,
If plac'd on the *right side*, I'm sure to be *wrong*;
But when I attract on the *left side* your sight,
Then, strange to relate, I appear on the *right*:
Yet still, when *en mode militaire* I have place,
Both *right side* and *left*: I can properly grace.

NEW QUERIES, and REBUSES.

I. QUERY, By Mr. John Bayley, of Middleton, Yorkshire.

Ye learned, pray say, why people deceas'd,
Are always interr'd with their heads to the west?

II. QUERY, by Miss Peggy Lugg of Penryn.

What is the difference between reason and wisdom? Or is there any real difference?

III. QUERY, by Dr. Conundrum.

We are informed by Plutarch, that the Spartan youth, at least those that were free, were permitted, by an express decree of the legislature, to steal with an unbounded licence. I would know upon what principles such a law could have been founded, or to what ends directed; a law in appearance so repugnant to the eternal, universal, and immutable rule of right, and so opposite to the policy of other civilized nations.

IV. QUERY, by Mr. William Crealock, junior.

Whether there is any thing that will prevent the cramp when people are swimming; and if there is, what?

V. QUERY, by A. B.

What is the meaning of the following words in Isaiah ix. 5. "But this shall be with burning and fuel of fire?"

VI. QUERY, by Miss Lambe.

On what principle is it that the ladies turn down an empty tea-cup in the bottom of a fruit pye, to prevent the syrrop from boiling out in baking?

I. REBUS, by Miss Polly Oliver, of Beamister.

The father of the faithful few;	My tender heart he early taught
A kitchen utensil,	To bring forth virtue's fruit;
Two-thirds of what we all may do;	Still rears with care the flexile thought,
My benefactor tell.	And makes young scions shoot.

II. Rebus

II. REBUS, by Strephon.

Take part of a lover, with part of his suit,
The same of the grave and the gay;
These will, when connected, without all dispute,
Discover the queen of the May.

III. REBUS, by Xeno Pell.

The serpent which poets say Hercules slew,
The charming young shepherd fair Venus well knew,
A Tartarus judge under Minos in pow'r,
She who by Jove was seduc'd in a shower,
That blessing oft meant when Minerva is nam'd,
A nymph of bright Juno's for beauty much fam'd,
The noted blind archer depicted a boy,
And the greatest of titles a prince can enjoy;
Th' initials, when rightly connected, declare
A lively, engaging, and good-natured fair.

IV. REBUS, by Philomathes.

If you a bullock set before	You may a city's name explore
A shallow river's brink,	I'the time you let him drink.

V. REBUS, by Mr. Thomas Baker, of Nuneaton.

An emblem of peace and a short scripture name,
Exhibit a nymph of Diarian fame.

* * The number of prizes are as usual eight, to be determined by lot, viz. one of 10 and one of 8 diaries for the solution of the prize-enigma before Candlemas-day; two of 10 diaries each for general solutions of the enigmas; two of 6 diaries each for the solution of queries and paradoxes; also one of 10 and one of 8 diaries for the solution of the prize-question before Candlemas-day. — Our correspondents are requested to make their compositions as brief as possible, to send answers with all new propositions, and to send their letters (franked or post paid) so as to come to hand before the 1st of May, with this direction, "For the Ladies' Diary, at Stationers Hall, London." — We have obliged as many as we possibly could of our ingenious correspondents, by the insertion of their compositions; and other pieces which remain still in our hands will be inserted in their turns. But we must acquaint them that we always give the preference to those correspondents whom we find more peculiar promoters of the Ladies' Diary, and who do not send compositions to other publications of a similar kind. — It is also earnestly requested that our correspondents will send their letters within the time limited. — Our own opinions agree entirely with that of our ingenious correspondent R. Y. or a Constant Reader, respecting the solution of his political query; which query we will excuse us from publishing, as the Ladies' Diary never admits any thing on that subject. His hints concerning queries will be complied with; but we cannot farther encroach on the mathematical part of the work. We thank ourselves much obliged by his ingenious hints, and hope for a continuance of his favours for the Ladies' Diary.

ANSWERS to the MATHEMATICAL QUESTIONS.

I. QUESTION 697.

WAS proposed by mistake, it being the same with the 1st quest. for 1772, and was answered in the almanac for 1773, by several different methods. Many of our contributors have again solved it, but generally according to one or other of the methods above referred to.

II. QUESTION 698 answered by Mr. James Young.

LET $5x$ and $3y$ = the diam. and height of the cone, and $4x$ and $2y$ = those of the paraboloid. Also put $a = 84823\frac{1}{2}$, $b = 139392\frac{1}{2}$, 3732 , and $c = 78539$ &c. Then will $25cyxx$ and $16cyxx$ be the solidity of the cone and parab. respectively; hence per quest. $9cyxx = a$; $\therefore xx = a \div 9cy$. From the preceding it also appears that the two solidities are as 25 to 16, whose diff. is 9; $\therefore 9 : 16 :: a : \frac{16}{9}a$ = the solidity of the paraboloid. Now, by p. 323 Hutton's

Mensuration, $\frac{-xx + 4yy}{3yy} \left[\frac{3}{2} - x^3 \right] \times 8cx$ = the convex surface of the

paraboloid, and which is $\therefore = \frac{16}{9}a - b = 11404\frac{1}{2}268 = d$ suppose. This equa. reduces to $768c^2x^6 + 3072c^2x^4y^2 + 4096c^2x^2y^4 = 9d^2y^2 + 48cdx^4$. Substitute now in this equa. the value of xx above found, and there will result $110592ac^2y^6 - 2187cd^2y^5 + 9216a^2cy^3 - 144a^2cdy + 256a^3 = 0$. From which we find $y = 30$. Hence x is found = 20. Then the diam. and alt. of the cone are 100 and 90, and those of the parab. are 80 and 60.

Almost in the very same manner is the solu. given by Messrs. Appleby, Atkinson, Barker, Cornwall, Dees, Drurey, Fatherley, Fininley, Hall, Hedley, Hooper, James, Lynn, Marshall, Nicholson, Reynolds, Roberts, Robinson, Roxbe, Smith, Spicer, Terril, Watkins, Willes, and others. — Those gentlemen mistook the problem, who attempted a solution by means of the similarity of figures, for the figures were not given in species or kind.

III. QUESTION 699 answered by Mr. Ralph Dees.

PUT x = A's guineas. Then, from the conditions of the question and the nature of proportion, the guineas of A, B, C, D, E, and F will be respectively x , $\frac{x + xx}{2}$, x^2 , x^3 , x^4 , and x^5 . Then, by the

quest. we have this equa. $x^5 = x^2x^{-1} + 3$. From this equation, by double position, is found $x = 2994$ = A's guineas; then B's = 5979, C's = 8964, D's = 26818, E's = 80353, and F's = 240576. — And in this manner is the answer given by Messrs. Barker, Boucher, Fininley, Hall, Matelot, Parnel, Philarithmus, Young, and the proposer,

Mr. James, who remarks farther that he intended the sum of A's and F's guineas to be $x^2x^{-1} + 3 = x^5 + x$. Hence is easily found $x = 3$. Then the numbers are 3, 6, 9, 27, 81, and 243.

Messrs. Dening, Drurey, Fatherley, Goddard, Hedley, Hooper, King, Lynn, Marshall, Nicholson, Reynolds, Roberts, Robinson, Rowe, Smith, Spicer, and Williams, supposing the 3 added to be a mistake, make it

$= x^2 \cdot x - 1$; then, by equating the indexes, $2x - 1 = 5$, and $x = 3$. From which the numbers are found 3, 6, 9, 27, 81, and 243.

Other methods of solution were given by Messrs. Barker, Bartlett, John Drurey, Lesthouse, Perrott, Mrs. E. Suggett, Terrell, and Watkins.

IV. QUESTION 700 answered by Mr. John Aspland.

PRIOR to the solution I shall demonstrate this

LEMMA. ABC is any Δ , H is the center of its circumscribed circle, and HD, HE, HF are \perp s on the three sides. If another circle be described thro' H and any angular point, as C, and thro' the foot E of one of the \perp s on one of the sides about the \angle C; then shall this circle pass thro' F the foot of the \perp on the other side about the \angle C, and its diameter EG shall always be $=$ HA the radius of the circumscribed circle; also FE shall be \parallel to the 3d side AB, and FG $=$ and \parallel to DH the 3d \perp ; the three chords EH, HF, FG ($=$ the 3 \perp s) completing the semicircle, when the center H is within the Δ , as in fig. 1; but FG must be placed the contrary way to leave the semicircle GHE when H is without the Δ ABC, as in fig. 2. — The circle will pass thro' F, because the opp. \angle s HFC and HEC are right ones; for the same reason the diam. of this circle will be $=$ the distance HC, which is $=$ HA or HB; also FE is \parallel AB, because F and E are the middle points of AC, BC. Moreover, since the right \angle s D and EFG are equal, as also \angle AHD $=$ (ACB in fig. 1 $=$) \angle FGE, and the hypo. AH $=$ the hyp. GE, \therefore FG $=$ DH; they are also \parallel because FE is \parallel AD. In fig. 2 the \angle AHD $=$ \angle FHE $=$ \angle FGE, and all the rest as in the 1st fig.

Hence then find (as in p. 95 and 230 of Sir I. Newton's Algebra) the circle FHECG, whose half is occupied by the 3 given \perp s EH, HF, and FG, and draw DH $=$ and \parallel to FG; then thro' D, E, and F draw the \perp s AB, BC, CA, forming the Δ required. By making the calculation as in p. 95 above-mentioned, there will be found GE $=$ HA $=$ 12.12, and the three sides of the Δ ABC will be 19.21, and 24.

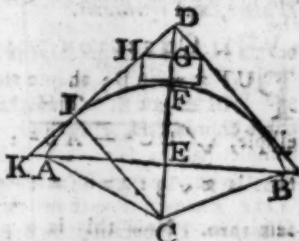
The same answered by Mr. Nathan Parnel, of Nuneaton.

PUT x = the radius HA, and the three \perp s DH $=$ a , EH $=$ b , and FH $=$ c . Then $\sqrt{xx - aa} = AD = DB = FE$, $\sqrt{xx - bb} = BE = EC$, and $\sqrt{xx - cc} = CF$; and since the rectangle of the diagonals FE, HC is $=$ the sum of the rectangles of the opp. sides, we have $x \sqrt{xx - aa} = c \sqrt{xx - bb} + b \sqrt{xx - cc}$. This equation squared, &c. gives $x^6 - 2sx^4 + s^2x^2 = 4a^2b^2c^2$; and here $2s$

Much in the same manner is the solution given by Messrs. *Barker, Bartlett, Boacher, Dees, J. Drurey, T. Drurey, Fatherley, Goddard, Hall, Hedley, Hooper, James, Loftbouse, Lynn, Marshall, Matelot, Nicolson, Perrott, Reynolds, Roberts, Robinson, Rowe, Smith, Spicer, Mrs. Suggett, Terril, Watkins, Willes, Williams, and Young.*

OUR correspondents generally remark, is not properly limited; which circumstance escaped our notice when we proposed it, as the author's solution had much the appearance of a proper one. The maximum of the triangle will be infinite; the hypotenuse becoming parallel to the base, the triangle degenerates into an infinite parallelogramic space. Many contributors solved it on the supposition that the two legs are equal.—Or the triangle might easily be determined at a given quantity instead of a maximum, but not geometrically.

FROM the common property of the circle, viz. $AE^2 + EF^2 \div 2EF$ = the radius CF, we easily find that the radius of a circle is $1\frac{5}{8}$ when the versed sine is 1 and its chord 3; then, by sim. figures, $1\frac{5}{8} : 25 :: 1 : 15\frac{5}{8}$ = EF :: $3 : 46\frac{1}{8}$ = AB. Hence CE = CF - FE = $9\frac{1}{8}$.



By Cor. 1, p. 34, Diary 1776, ED is $= \sqrt{3CF^2 + CE^2} - 2CE$
 $= 25'12524$, and CD $= 34'74062$; hence DI $= \sqrt{DC^2 - CI^2}$
 $= 24'122$.

Now $DF = DC - CF = 9.74062$, and (by Theor. 19, p. 209, Simpson's Geom.) $FG = \frac{1}{2} DF = 3.24687$ the altitude of the cylinder; and $DG = 2 GF = 6.49374$; hence $DI : IC :: DG : GH = 6.73$ the radius of the cylinder's base.

Solutions were also given by Messrs. *Aspland, Atkinson, Barker, Boucher, J. Drurey, T. Drurey, Elsieb, Farberley, Goddard, Hadley, King, Loftbouse, Lynn, Marshall, Mutelot, Nicholson, Parnel, Perratt, Reynolds, Roberts, Robinson, Rowe, Smith, Spicer, Taylor, Terril, Walker, Willes, Williams, and Young.*

PUT $a = 78.53982$ the area of the quadrant, and $x =$ the less part; then $a - x =$ the greater, and $x : a - x :: a - x : a$; hence $ax = (a - x)^2$, and $x = \frac{1}{2}a \times 3 - \sqrt{5} = 29.99954$. Then $a - x = 48.54028$ the other part, either of which may be the semi-segment ADP. Then, having the radius AC and the area ADP, the



versed sine AD will easily be found = 4.918 or 6.952 by p. 108 of Hutton's Mensuration. Hence $DP \perp AC$ determines the double point P.—Or $CD = 5.082$ or 3.046 the sines of $30^\circ 33'$ or $17^\circ 45'$ the two values of the arcs BP.—In this manner also was the solution given by Messrs. *Aspland, Barker, Boucher, Fininley, Hall, Marshall, Parnel, and Robinson.*

The same answered by Mr. William Reynolds.

HE makes $10^2 \times .7854 = 78.54 =$ the area of the quadrant. Then, by the same equation as in the former solution, are found 30 and 48.54 the two parts nearly. Then, by rule 5, p. 105, Hutton's

Mensuration, the area ADP is $\frac{3}{2}v\sqrt{dv} - \frac{3}{2}vv = 30$, where $v =$ the versed sine AD, and $d = 20$ the diam. Hence $v^4 - 33\frac{1}{2}v^2 = -3375$. The root of which is $v = 4.915 = AD$. And the semi-chord DP is $8.6115 =$ the sine of $59^\circ 27'$ the arc AP. Its complement BP is $30^\circ 33'$.—Messrs. *Dees, Fatherley, and Lynn* likewise solve it by similar rules from the same book.

Other methods of solution were given by Messrs. *Goddard, Hedley, James, Lesibouffe, Nicolson, Roberts, Rowe, Spicer, Taylor, Terri, Walker, and Williams.*

VIII. QUESTION 704 answered by Mr. John Fatherley.

PUT $z = AB$; then $2z = DC$, and $4z = HI = 2IE$. Then, by the nature of the ellipse, $\sqrt{DC^2 - AB^2} : IH :: DE : GE$,

that is $z\sqrt{3} : 4z :: z : \frac{4z}{\sqrt{3}} = GE$ the fixed

semi-axe. Now this is a particular example of Case 1, p. 15, Hutton's Miscellanea Mathematica, in which the values of the quantities are thus: $n = .7854$, $m = 386$, $p = 4n$, $r = z$, $q = 2z$, and $x = 4z$; which being substituted, give for the time of evacuation

$\frac{52zz}{5} \sqrt{\frac{z}{m}} = 27.570223 \times 60 \text{ seconds} = t$ suppose; hence $z =$

$\sqrt{\frac{5}{52 \times 52} m t t} = 25 = AB$ the head diameter; then $DC = 50$ the bung diameter, and $IH = 100$ the length. The content is $522\frac{1}{3}$ sh gallons.

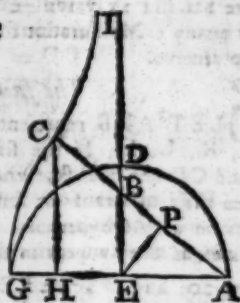
In the very same manner is the solution given by Messrs. *Barker, Boucher, J. Drurey, Lynn, Marshall, Nicolson, Parnel, and Watkins.* Mr. *John Aspland* made an investigation from first principles after the manner of that in the book above quoted; and other solutions were given by Messrs. *Roberts, Robinson, Rowe, Spicer, Taylor, and Walker.*

IX. QUESTION 705 answered by Mr. John Lynn.

PUT $GE = EA = a$, the abscissa $GH = x$, and ordinate $HC = y$. Then $EH = a - x$, $AH = 2a - x$, and $AC = \sqrt{2a - x}^2 + y^2$; also, by sim. Δ s, $AH : AC :: AE : AB =$



the nature of the curve.



= 116581.27 yards = the solid content of the tumulus, which, at 1 penny each, amount to 485l. 15s. 1 $\frac{1}{2}$ d. the sum the workmen have to receive.

The same answered by Mr. Lynn.

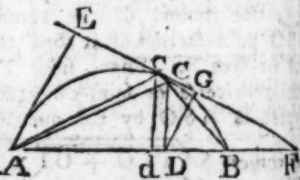
LET ADB represent the hyperboloid ; H, I, K, L, M, N the six oaks ; FG the fir ; and CD the obelisk, whose height 17 yards is = the semi-transf. or semi-conj. or semi-parameter of the hyperbola. Draw the rest of the lines as they appear in the figure. Then $DE = 20$, and $GS^2 = FE^2 = 2CD + DE \times DE = 1080 = a^2$ suppose. Again, putting the radius AS or SI = x , since $AH = BK$ is an arc of 30° , its sine $HO = KP$ is $= \frac{1}{2}x$, and co-sine $GS = SP = \frac{1}{2}x\sqrt{3}$; hence $GO = \frac{1}{2}x\sqrt{3} - a$, and $GP = \frac{1}{2}x\sqrt{3} + a$; and, by right-angled Δ , $GH^2 = \frac{1}{4}x^2 + \left(\frac{1}{2}x\sqrt{3} - a\right)^2$, $GI^2 = x^2 + a^2$, and $GK^2 = \frac{1}{4}x^2 + \left(\frac{1}{2}x\sqrt{3} + a\right)^2$; and the continual product of the squares of these three lines being equal to that of the six distances of the trees, because GL, GM, GN are respectively = GK, GI, GH, we have $GH^2 \times GI^2 \times GK^2 =$ (by actually multiplying) $a^6 + x^6 = 16884712000$ (not as printed) = b^6 suppose ; hence we find $x = \sqrt[6]{b^6 - a^6} = 50$ the radius of the grass plat, or of the base of the hyperboloid. Then, by the nature of the fig. $DS = \sqrt{CD^2 + AS^2} - CD = 35^8 1098$. And lastly, as above, the solid content is then easily found = $116583^4 7$ yards, which amount to $4851. 15s. 3\frac{1}{2}d$. nearly.



In this last manner also is the solution given by Mr. *Rob. Marshall*, of *Whitley*.—Solutions were also given by Messrs. *Aspland, Barker, Line, Reynolds, Taylor, and Walker*.

XI. QUEST. 707 answered by the Proposer Mr. John Hellins.

IF EF be a tangent to the circle in the point C, cutting AB produced in the point F; it will always be $FD : DC :: AD : DC$: But when the right-angled $\triangle ADC$ is the greatest possible, that is, when $AD \times DC$ is the greatest possible, it is $AD : DC ::$



— AD : DC. Therefore, when $\triangle ADC$ is the greatest possible, it will be $FD : DC :: AD : DC$, or $FD = AD$. Whence it is manifest that $\angle DAC = \angle DFC$, and that $\angle ACE (= \angle DAC + \angle DFC) = 2 \angle DAC$, or that the arc AC = double the arc CB. Hence then the point C will always be determined by trisecting the given arc AB.

COR. 1. If BC be drawn; it will very easily be found, by arguing as above, that $BC = BF$.

which, at
en have

Cor. 2. It is evident that the problem may sometimes become a plane problem; as when the arc AB is $=$ either 180 , 216 , 270 , or 360 degrees; the chord BC being then $=$ the radius of the given circle, the side of the inscribed pentagon, the side of the inscribed square, or side of the inscribed equilateral triangle, respectively.

SCHOLIUM. There are several other ways of demonstrating that the point C will be determined by trisecting the arc AB; one of which I shall here add. — In the arc take c indefinitely near to C; join c A, and draw cd || CD. Then it is evident that the very little $\triangle A c C$ and parallelogram cD, having the common base cC, must, when the $\triangle ADC$ is the greatest possible, be equal each other. If therefore their perpendicular altitudes AE, DG be drawn, it is plain that AE must be $= 2 DG$; and thence, by sim. $\triangle s$, $AF = 2 FD$, or $AD = DF$. — The rest of the demonstration is the same as the above.

The same answered by Mr. Alex. Rowe.

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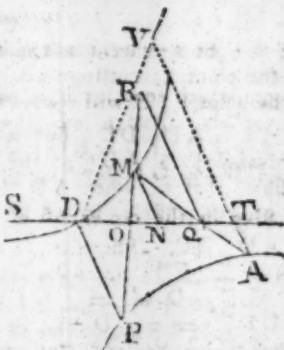
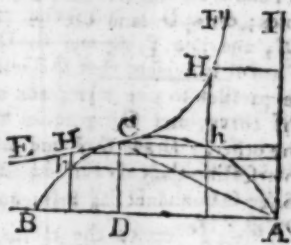
ble, it

ERECT $AI \perp AB$, and to the asymptotes BA , AI describe an hyperbola to touch the arc as in the point C . So shall C be the point required.—For, draw CA , also complete the parallelogram AC , and constitute any other parallelogram AH , Ah at the hyperbola and corresponding point of the circle. Then the $\triangle ADC = \frac{1}{2} \square AC = \frac{1}{2} \square AH$ (by the nature of the hyperbola) is great ADC is the greatest possible triangle.

Ingenious solutions were also given by Messrs. *Aspland, Barker, Boucher, Fotherley, Fininley, Hedley, Loftbouse, Lynn, Roberts, Robinson, Rowe, Taylor, Terril, Walker, Willes, and Williams.*

XII. QUEST. 708 answered by the Proposer Mr. Geo. Beck.

LET the end Q of the given line QR move along the line ST, given in position, while PMR, AQM, revolving about the given poles P and A, always pass thro' R and Q respectively, intersecting each other in M. Draw PD, MN, and AT all parallel to QR: and call QR, m ; PD, g ; AT, d ; DT, p ; DN, x ; and NM, y : Then $g + y = x$

$$g+m : DQ = \frac{gx + mx}{g+y}; \text{ and } d+y$$
$$p-x :: y : QN = \frac{py - xy}{d+y}; \therefore$$
$$\frac{g+mx}{g+y} - \frac{py-xy}{d+y} = x, \text{ or } dmx + m + g - d \cdot xy - gp + py$$


$y = 0$; or putting $r = m + g - d$, it is $x = \frac{pgy + pyy}{dm + ry}$; being

a general equation to the common hyperbola, one of whose asymptotes is parallel to DT at the distance of $dm \div r$ from it, towards P. Also if there be made $TV = r$ and $\parallel QR$, and D, V be joined, then DV is parallel to the other asymptote.

COR. 1. If $r = 0$, then $dmx = p \times dy + y^2$, and the curve is a parabola.

2. If $g = d$, then (m being then $= r$) $mx = py$, and the locus is a right-line.

The same answered by Mr. John Aspland.

LET IN be the given line moving parallel to itself between GI and FN, and D, E the given poles; draw DQ, EB \parallel and $=$ IN, and join E, Q and B, D. Then it is evident that DB will be parallel to one asymptote of the curve, and GI parallel to the other. Draw DN and EI intersecting the curve in O; also make OC and DP \parallel FN, and OP \parallel BD.

Put $GS = a$, $FD = n$, $EH = r$, $ES = m$, $DP = CO = x$, and $DC = PO = y$. Then by the sim. $\Delta s DCO$,

DFN , $y : x :: n : \frac{nx}{y} = FN = SI$ because of the parallels; and by

the sim. $\Delta s ESI$, FAO , it is $ES : SI :: EA : AO$, that is, $m : \frac{nx}{y}$

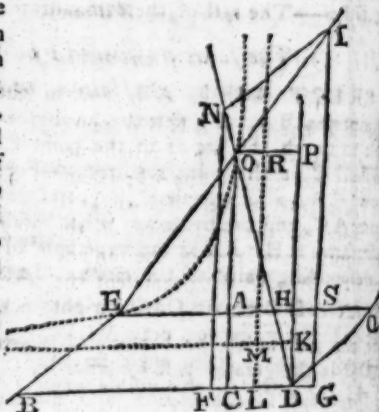
$:: r - y : x - a$; hence this equation $xy - \frac{may}{m+n} - \frac{nrx}{m+n} = 0$.

From which equation it is manifest that the required locus will be an hyperbola. And if we take as $ES + FD : ES :: GS : DK$, and $ES + FD : FD :: EH : DL$, and then draw KM and LM parallel to DB and GI respectively, these lines will be the asymptotes intersecting in the center M of the hyperbola: For $DL = \frac{nr}{m+n}$, and

$DK = \frac{ma}{m+n}$, $\therefore MR = x - \frac{ma}{m+n}$, and $OR = y - \frac{nr}{m+n}$;

hence $OR \times RM = xy - \frac{may + nrx}{m+n} + \frac{mnra}{(m+n)^2}$; but $xy - \frac{may + nrx}{m+n}$

$= 0$ by our equa. before obtained, $\therefore OR \times RM = \frac{mnra}{(m+n)^2}$



the arc Vp is the measure; consequently there are now given the two legs Vp , pP , in the right-angled spherical $\triangle VpP$, to find PV , $= 18^\circ 1' 50''$. Again, having, in the right-angled plane $\triangle KIO$, the side $KO = 2.25$, and the $\angle KOI = 5^\circ 43' 30''$, IO will be found $= 2.239$; add $li = 31.283$, the sum of the semidiameters of the \odot and D , and we have $Oi = 33.522$, which is the cosine of the arc VC , or its equal Vq ; \therefore by the nature of the projection, 56.317 ($= ON$): $33.522 :: 1 : \text{cosine of } 53^\circ 28' 14''$, from which taking $18^\circ 1' 50''$, there will remain $35^\circ 26' 24''$ for the comp. of the lat. of the northern limit. And in this manner will the limit towards the enlightened pole be always found. But seeing that the penumbra continually approaches the obscured pole until it quits the disk at G , it is manifest that that point will be the nearest approach to the south pole in the present case. Now from the semidiam. Ih of the penumbra, $= 31.283$, if $IO = 2.239$ be taken, the remainder 29.044 will be $=$ to Oh , which is manifestly the cosine of the arc WG to the radius OW ; $\therefore 56.317 : 29.044 :: 1 : \text{cosine of } 58^\circ 57' 15'' = WG$; from it take $W\pi = Vp$, and there will remain $\pi G = 42^\circ 5' 00''$; \therefore in the spherical $\triangle \pi\pi G$, right-angled at π , there is given $\pi\pi$, and πG , to find ΠG , the colat. of the southern limit, which comes out $= 42^\circ 29' 25''$.

ERR. The letter I is mist at the intersection of QK and OV .

SCHOLIUM. The longitudes of these two places are also readily found. For $P\pi$ being the meridian whereon the sun is centrally eclipsed, its long. is known, and the $\angle s OPq$, $O\Pi G$, which are the longitudes of these places from that meridian, are found by a single proportion each in the right-angled $\triangle s VpP$, $G\Pi\pi$.

The whole might easily have been constructed by scale and compasses, or indeed solved near enough for common use by the globe itself; which methods I should have put down, were it not that I am afraid of exceeding the limits of your diary.

Solutions were also given by Messrs. *Lynn* and *J. N.*, and *M. Taylor*.

XIV. QUESTION 710 answered by Mr. Mic. Taylor.

PUT $r = AC$ the radius of the earth, $\rho =$ the density at the surface at A , $c = 3.1416$, $n =$ the required exponent of the power, and $x = CB$ any distance from the center. Then, by the quest.

$$2r^{1-n} : r+x^{1-n} :: 1 : \frac{2r}{r+x} = \text{the density}$$

at the place B . But $4cx^2$ is the surface whose radius is CB or x ; consequently $4cx^2 \times$

$\frac{2r}{r+x} = 2^{2+n} cr^n x^2 \dot{x} \cdot \frac{1}{r+x} =$ the fluxion of the quantity of matter in the sphere BDE ; or, by putting $2^{2+n} cr^n = a$, the same fluxion is $a x^2 \dot{x} \cdot \frac{1}{r+x}$. The fluent of this is



$$\frac{r+z}{3-n} \times z^2 - \frac{2rz}{2-n} + \frac{2r^2}{2-n \cdot 1-n} \quad \text{But when } z=0,$$

this becomes $\frac{2ar^3-n}{3-n \cdot 2-n \cdot 1-n}$; \therefore the correct fluent is

$$\frac{-2ar^3-n}{3-n \cdot 2-n \cdot 1-n} + \frac{a \cdot r+z}{3-n} \times z^2 - \frac{2rz}{2-n} + \frac{2r^2}{2-n \cdot 1-n}$$

= the quantity of matter in the sphere whose radius is z . And when

$$z=r, \text{ the same becomes } 2^3 r^3 c \times \frac{2-2^n-n+n^2}{3-n \cdot 2-n \cdot 1-n} = \text{the}$$

matter in the whole earth; which being, by the question, $= 2^{\frac{1}{2}} \times$

$$2^3 r^3 \times \frac{1}{6} c, \text{ from this equa. we obtain } \frac{2-2^n-n+n^2}{3-n \cdot 2-n \cdot 1-n} = \frac{5}{1 \frac{1}{2}};$$

from which equation the value of n comes out 5.

The general density being $\left(\frac{2r}{r+z}\right)^n$, if z be taken $= 0$, this ex-

pression becomes $2^n = 2^5 = 32$ the density at the center. Moreover,

$$\text{by taking } \left(\frac{2r}{r+z}\right)^n = 2^{\frac{1}{2}}, \text{ we obtain } r-z = r \times 2 - \frac{64}{5} =$$

$334935 r = AB$; or the depth below the surface is nearly $\frac{1}{3}$ of the radius at the place of the mean density.

The same answered by Line.

PUT $AC = r$, the circumf. $= c$, and $FB = z$. Then $\frac{2}{3} cr^2 =$
solidity of the globe. But $c \times \frac{z-r}{r} =$ the circumf. BDE, and $\frac{2c}{r}$

$\times \overline{z-r}^2 =$ the surface of this sphere; also as $\overline{2r}^n : z^{-n} :: s$

(density at A) : $s \cdot \overline{2r}^n \cdot z^{-n} =$ the density at B; \therefore the fluent of

$$\frac{c \cdot \overline{2r}^n \cdot z^{-n} \cdot \overline{z-r}^2}{r} \dot{z} \text{ or } 4csr^2 \times \frac{2^n - n^2 + n - 2}{n-1 \cdot n-2 \cdot n-3}$$

divided by the mass $\frac{2}{3} cr^2$, must be $= \frac{5}{2} s$ by the question; hence $n = 5$.—The rest is easily found.

Messrs. Beck, Lynn, J. N., O'Connor, and Roberts also answered it.

XV. or PRIZE QUESTION, 711, answered by Peter Puzzleme

LET f denote the force accelerating the velocity of a point on the surface of the cylinder about the axis thereof at any instant during the motion down the plane, when its inclination is 25° . Then, putting x for the distance of any particle (p) of the cylinder from the axis; r for the radius of the cylinder; and B for its content; we have $r ::$

$:: f : \frac{fx}{r}$, the force accelerating p : and $\frac{fp x}{r}$ will be the motive force

of p . Therefore, by the property of the lever, $r :: x :: \frac{fp x}{r} : \frac{fp x^2}{r^2}$,

the motive force which acting at the surface of the cylinder will be

equivalent to $\left(\frac{fp x}{r}\right)$ the motive force of p . Let c be put for $(6 \cdot 283)$

the circumference of the circle whose radius is r ; then, considering the length of the cylinder as unity, the ring of particles at the distance

from the axis will be denoted by $c x x$: consequently $\left(\frac{c f r^2}{4}\right)$ the fluent

of $\frac{c f x^3}{r^2}$, when x is therein taken $= r$, will be the whole motive

force which must necessarily act at the surface of the cylinder, that the accelerative force of a point there may be f . Which motive force, by substituting B for its equal $\frac{1}{2} c r^2$, becomes $\frac{1}{2} f B$. Now, by the quest. this quantity $\frac{1}{2} f B$ will be equal to the friction when the inclination of the plane is 25° : therefore $g m B - \frac{1}{2} f B$ will then be the motive force, and $g m - \frac{1}{2} f$ the accelerative force urging the axis of the cylinder downwards parallel to the plane, g denoting $(32 \frac{1}{8})$ the accelerative force of gravity, and m the sine of 25° to the radius r . Which accelerative force $(g m - \frac{1}{2} f)$ of the axis will be $= f$, the velocity of the axis being just equal to the velocity wherewith a point on the surface of the cylinder will be carried about the axis, when the friction keeps the cylinder from sliding. Therefore, from the equation $g m - \frac{1}{2} f = f$ we have $f = \frac{2}{3} g m$; and consequently $(\frac{1}{2} f B)$ the friction, when the plane's inclination is 25° , will be $= \frac{1}{3} g m B$.

Moreover, the cosine of 60° being $= \frac{1}{2}$, the pressure against the plane, when its inclination is 60° , will be $= \frac{1}{2} g B$; and when the inclination is 25° , the pressure will be $= g n B$, n denoting the cosine of 25° . Therefore, the friction being as the pressure, we have $g n B ::$

$\frac{1}{2} g B :: \frac{1}{3} g m B : \frac{g m B}{6 n}$, the friction when the plane's inclination

is 60° . Which friction $\left(\frac{g m B}{6 n}\right)$ being taken from $3 \frac{1}{2} g B$, the whole

motive force on the cylinder in a direction whose inclination is 60° ,

the remainder $3 \frac{1}{2} g B - \frac{g m B}{6 n}$ will be the motive force, and $3 \frac{1}{2} g -$

$\frac{g}{6\pi}$ the accelerative force, urging the axis of the cylinder downwards parallel to the plane when inclined in an angle of 60° .

The accelerative force, being thus found, the required time of descent, by the well-known theorems relating to the motion of bodies uniformly accelerated, is readily found equal to $\sqrt{\frac{1080\pi}{3^{\frac{3}{2}}g\pi - gm}} = 2.66$ seconds;

which will be the same, let r be what it will.

Furthermore, e being put for the accelerative force of a particle at the surface of the cylinder about the axis, when the plane's inclination is 60° , it appears by what is done above, that $\frac{1}{2}eB$ will be $= \frac{gmB}{6\pi}$:

whence $e = \frac{gm}{3\pi}$. It follows therefore from the well-known theorems

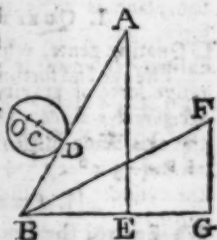
just now mentioned, that $\frac{3^{\frac{1}{2}}g}{2} - \frac{gm}{6\pi} : \frac{gm}{3\pi} :: 90 : \frac{180m}{3^{\frac{3}{2}}\pi - m} =$

17.7457, the space a point at the surface of the cylinder will be carried about the axis during the descent, when the inclination of the plane is 60° : which space (17.7457) being divided by (3.1416) the circumference of the cylinder, gives 5.64, the required number of revolutions.

N. B. The length of the plane was printed 30 feet, instead of 30 yards, in the last Diary.

Mr. David Kinnebrook, of Norwich, likewise answered it thus:

LET AB and BF represent the two inclined planes, each of 30 yards or 90 feet long; AE and FG perpendiculars on the horizontal plane BEG; C the center of gravity of the cylinder, and O its center of oscillation with respect to the point of suspension D. Also put $s = 32\frac{1}{2}$ feet.



Then, if the cylinder DCO be supposed to be upon the plane FB, and to descend freely, the

velocity it acquires in $1''$ is $\frac{GF}{FB} \times s$; but if it be supposed to roll down FB, we have $OD : OC :: 3 : 1 ::$ the relative weight of the cylinder : the friction just sufficient to hinder it from sliding :: $\frac{GF}{FB}$

$\times s : \frac{GF}{3AB} \times s$ (because $AB = BF$) the velocity which would be

destroyed in $1''$ by the said friction, which is also the proper measure of the friction; but the friction is supposed to be as the pressure against the

plane, $\therefore BG : BE :: \frac{FG}{3AB} \times s : \frac{BE \times FG}{3AB \times BG} \times s$ the velocity destroyed in $1''$ by the friction of the cylinder upon AB, which

taken from $\frac{AE}{AB} \times$ the velocity generated by gravity in 1" on AB,

gives $\frac{AE}{AB} - \frac{BE \times FG}{3 AB \times BG} \times$ the velocity generated in 1" by the center of gravity of the cylinder in its motion down AB; whence

$$\sqrt{\frac{AE}{AB} \times} - \frac{BE \times FG}{3 AB \times BG} \times : \sqrt{AB} :: 1 : \frac{AB}{\sqrt{AE \times} - \frac{BE \times FG}{3 BG}}$$

= (when AB is 30 yards or 90 feet) 2' 664" the time of the cylinder descending down AB by a mixt motion of sliding and rolling.

To find the number of revolutions; we have as OC : CD :: 1 : 2

$$\frac{BE \times FG}{3 AB \times BG} \times : \frac{2 BE \times FG}{3 AB \times BG} \times = \text{the accelerating force at the surface}$$

of the cylinder to turn it about its axis; hence as $\frac{AE}{AB} \times - \frac{BE \times FG}{3 AB \times BG}$

$$\times : \frac{2 BE \times FG}{3 AB \times BG} \times :: 90 \text{ feet } (= AB) : \frac{2 BE \times FG \times 90}{3 AE \times BG - BE \times FG}$$

= 17' 7459 the space rolled; which divided by 3' 1416, we have 5' 648" for the number of revolutions.

Other solutions were received, but they were not right.

New QUESTIONS to be answered.

I. QUESTION 712, by Mr. James Nicholson.

Equating gents, who love to hide | From what's below please to deliver
The age and fortune of your bride, | The values of x , z , and y .

$$x^6 + y^4 + z^2 = a,$$

$$x^3 y^2 + x^3 z + y^2 z = b,$$

$$x^9 + 3x^6 \cdot y^2 + z + 3x^3 \cdot y^2 + x^2 = c.$$

II. QUESTION 713, by Mr. John Shadgett.

Required the dimensions of a right-angled triangular piece of ground whose base and perpendicular are in the ratio of 3 to 2, and the area of its inscribed circle equal to the superficial content of a wall 6 feet high inclosing the triangle.

III. QUESTION 714, by Mr. Mark Elstob, of Shotton.

LET a cylindrical vessel, of 2 feet diameter, be exactly filled with water, at the surface of the earth; and suppose it to descend gradually towards the earth's center: It is required to find its distance from the center when the extreme part of the water next the sides of the vessel is one hundredth part of an inch below the top of the vessel, or when it wants one hundredth part of an inch of being full; admitting the surface of the water at the commencement of the motion to be a real plane, the earth a perfect sphere, and its radius 21000000 feet.

IV. QUESTION 715, by Mr. Ralph Dutton.

THERE is a well at Dunham town,
Whose bucket's by a rope let down
Off a cylindric axle-tree,
Whose length and girt below you see.

The rope's involv'd from end to end;
Each fold per margin does extend;
Its length does fathom just the well;
Therefore its depth to me pray tell.

$x^2 + x^2 + x + x = 2375$, and $xx = 6$; where x represents the length, and x the girt or circumference in feet of the axle-tree. The rope is 1 inch thick, and the folds touch each other.

V. QUESTION 716, by Mr. Edward Boucher.

TO determine a circular arc such that its sine may be equal to a times the square of its cosine; and to find the value of a so that both the sine and cosine may be rational numbers: the rad. being 1.

VI. QUESTION 717, by Mr. Wm. King, of Lofthouse.

SUPPOSE two ships, the one at the north pole and the other at the equator, to commence motion at the same time; the ship from the pole sails directly south towards that point of the equator from whence the other departs, depressing the pole uniformly 1 degree in a day, or 24 hours; the other from the equator sails on the arc of a great circle, which at the beginning of the motion bears W. N. W. uniformly 2 degrees a day: To find when they will be the nearest possible to each other.

VII. QUESTION 718, by Mr. John Aspland.

IN a plane triangle, given the line from the vertical angle to the middle of the base, the line bisecting the vertical and terminated by the base, and the difference of the angles at the base; to determine the triangle.

VIII. QUESTION 719, by Mr. John Fatherley.

SUPPOSING a round tapering tree to girt 14 feet at the greater end, and 2 feet at the less, the length being 32 feet: Now by the usual method of multiplying the length by the square of the mean quarter-girt, the content of this piece of timber is 124 feet; but by bisecting the length it is known that the two parts will then be nearest to the most possible by the same method; then if the lengths of these two parts be again bisected, and all those last parts bisected again, and so on, bisecting continually; it is required to find the limit to which the sum of the measures of all the parts approximates by the continual bisections ad infin. and also to find the last number of parts whose contents taken together shall make the sum just 151 feet, still computing by the usual method first mentioned.

IX. QUESTION 720, by Mr. Tho. Moss.*

TWO indefinite right lines AP and AR forming a given angle, and a point E between them being also given; it is proposed to draw a line thro' the given point E, meeting the said indefinite lines in G and H, so that GI being drawn parallel to a line AV given by position, and terminating in the other indefinite line in I, and AK perpendicular to GH and meeting it (produced if necessary) in K, the lines GI and AK shall be to each other in the given ratio of m to n .

* This gentleman has just published, price 2s. 6d. (and dedicated to the Hon. the Commissioners of Excise) the Description and Use of a new Instrument for obtaining the diameter of any cask in the middle between the bung and head. Together with a new and extensive Table, exhibiting the true lengths of casks, &c.

X. QUESTION 721, by Mr. Mic. Taylor.

TO find the longest tangent that can be drawn to a given ellipse; the length of the tangent being determined by the point of contact and the perpendicular let down on the tangent from the center.

XI. QUESTION 722, by the Rev. Mr. Lawson.

HAVING given two triangles on the same base, or on equal bases in the same right line, but of unequal altitudes, it is required to draw a line parallel to the common base cutting the other sides of the two triangles so, that the parts of it intercepted between the said other two sides in each triangle may be in a given ratio. ----- N. B. This question has formerly been proposed elsewhere, but it is here re-proposed in order to receive different answers to it.

XII. QUESTION 723, by Mr. Thomas Barker, of Helton.

TO find when the three concentric hands of a clock make all equal angles with each other, or have such positions as to divide the circle into three equal parts (supposing them to begin to move all together from a conjunction), in each of the two cases, viz. 1st, supposing that for every time the first hand moves round, the second goes 10 times, and the third goes 100 times round; and 2dly, for the case of the usual hour, minute, and second hands of a clock (if possible) wherein the first goes round in 12 hours, the second in one hour, and the third in one minute.

XIII. QUESTION 724, by Mr. Wm. Kay, of Wakefield, Yorkshire.

SUPPOSE the sphere to be projected on a plane parallel to the equator; it is required to find the projecting point, or place of the eye, so that two given equal arches of the meridian, the one set off from the equator and the other from the pole, may be equal also in representation.

XIV. QUESTION 725, by Nauticus.

DECEMBER the 21st, 1774, the sun rose at 10 minutes past 5 o'clock in the morning by any watch, which shewed true time; we sailed S. S. W., and the sun set at half past 7 by the same watch: I would know at what rate the ship went per hour.

XV. or PRIZE-QUESTION, 726, by Peter Puzzlem.

[The Candidates for the Prizes to send their Answers before Candlemas-day.]

IF the one of two given balls, touching each other and resting on a horizontal plane, be struck by a third given ball moving with a given velocity upon the plane in any given direction oblique to the line passing thro' the centers of the two quiescent balls; how will the three balls move after the stroke, supposing them perfectly hard?

* * The several Prizes have been determined by Lot as follows: viz. First, for the solu. of the Prize Quest. to Peter Puzzlem 12, and to Mr. Da. Kinnebrook 8 diaries. — 2dly, For the solu. of the Prize Enig. to Mr. G. Lacey 10, and to Mr. Rob. Richardson 8 diaries. — 3dly, For the general solu. of the Enig. to Dr. Conundrum and Mr. J. Goodaker 10 diaries each. — 4thly, For the solu. of the Queries, &c. to Mr. Ra. Dutton and Mr. Jos. Hunt each 6 diaries. All of whom will please to send for them to Mr. Geo. Hawkins, at Stationers-Hall, London.

N. B. Letters for the next Diary to be directed thus: To the Author of the Ladies Diary, Stationers-Hall, London. They must be post paid or franked, and come to hand before the 1st of May. And solu. must be sent with all new questions, &c.

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